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Аннотация

В статье представлены исследования зоопланктона оз. Балкаш за период высокого (2018 г.) и низкого (2025 г.) уровня воды. Изменение уровенного режима водоема влечет за собой корректировку химического состава среды обитания гидробионтов, в конечном итоге перестройку их сообщества. С повышением минерализации, содержанием органического вещества и биогенных элементов изменился видовой состав зоопланктона – число коловраток снизилось с 37 до 23, число ракообразных увеличилось с 17 до 24. Произошло замещение пресноводных видов солелюбивыми видами. Фоновыми видами по всей акватории озера неизменно стали 4 вида Diaphanosoma lacustris, Arctodiaptomus salinus, Mesocyclops leuckarti и Thermocyclops crassus. В восточном биотопе основное ядро пополнила Daphnia galeata. Изменения затронули не только качественный состав, но количественное развитие зоопланктона – к 2025 г. произошло снижение показателей, как по Западному Балкашу, так и по Восточному, на 17–60 % по численности и 34–62 % по биомассе. За рассматриваемый период наибольшее значение при формировании количественных показателей среди видов, на постоянной основе, имели диаптомус и диафаносома. Однако, за прошедший период в западной части озера возросла роль ветвистоусого рачка, в восточной повысил свою значимость диаптомус. В работе приведены результаты математических расчетов зависимости структурных показателей зоопланктона от химических параметров, температуры, уровня воды и развития фитопланктона.

Исследования по вопросам, озвученным в статье, финансируются Министерством сельского хозяйства Республики Казахстан (Грант № BR23591095) в рамках программы «Комплексные исследования водоемов для сохранения и устойчивого использования водных биологических ресурсов на основании оценки их потенциала и моделирования динамики запасов».

Abstract

This article presents studies of the zooplankton of Lake Balkhash during periods of high (2018) and low (2025) water levels. Fluctuations in the reservoir's water level regime lead to adjustments in the chemical composition of the hydrobionts' habitat, ultimately resulting in the restructuring of their community. With increasing mineralization, organic matter, and nutrient content, the species composition of zooplankton changed: the number of rotifer species decreased from 37 to 23, while the number of crustacean species increased from 17 to 24. A replacement of freshwater species by halophilic species occurred. Four species - Diaphanosoma lacustris, Arctodiaptomus salinus, Mesocyclops leuckarti, and Thermocyclops crassus - consistently remained the background species throughout the lake's water area. In the eastern biotope, Daphnia galeata supplemented the core group. These changes affected not only the qualitative composition but also the quantitative development of zooplankton: by 2025, there was a decline in indicators in both Western and Eastern Balkhash by 17-60% in abundance and 34-62% in biomass. During the period under review, diaptomus and diaphanosoma consistently held the greatest significance in the formation of quantitative indicators. However, over the past period, the role of Cladocera has increased in the western part of the lake, while the significance of Diaptomus has grown in the eastern part. The paper presents the results of mathematical calculations concerning the dependence of zooplankton structural indicators on chemical parameters, temperature, water level, and phytoplankton development.

Research on the issues raised in the article is funded by the Ministry of Agriculture of the Republic of Kazakhstan (Grant No. BR23591095) within the framework of the program «Comprehensive studies of water bodies for the conservation and sustainable use of aquatic biological resources based on an assessment of their potential and modeling of stock dynamics».

Ключевые слова: Юго-Восточный Казахстан, оз. Балкаш, зоопланктон, таксономический состав, численность, биомасса, уровень воды, минерализация, органическое вещество, корреляция.

Keywords: South-Eastern Kazakhstan, Lake Balkhash, zooplankton, taxonomic composition, abundance, biomass, water level, mineralization, organic matter, correlation.

Введение. Озеро Балхаш, одно из крупнейших бессточных водоёмов Республики Казахстан, занимающий третье место по площади и обладающий наибольшими среди внутренних водоемов рыбными ресурсами (уловы свыше 8 тысяч тонн рыбы в год). Расположено в аридной зоне и питается, в основном пятью реками, текущими с юга. Главная артерия водоёма, обладающая до 80 % поверхностного стока, река Иле, играет определяющую роль в гидролого-гидрохимическом режиме озера [1]. Впадает в западную часть озера и доносит свои воды до полуострова Сарыесик, который является естественным разделом водоёма на западную и восточную части. Остальные четыре реки, Каратал, Аксу, Лепсы и Аягоз, впадают в восточную часть озера и несут 20 % поверхностного стока. Озеро вытянуто в широтном направлении с юго-запада на северо-восток и напоминает по форме серп. Многочисленные отмели и косы, далеко выступающие в озеро, и не менее многочисленные заливы, глубоко вдающиеся в берег, создают большую изрезанность береговой полосы [2]. Такая расчлененность котловины озера обусловливает резкое различие в солености воды – Западный Балкаш является пресным или слабо солоноватым водоемом, Восточный Балкаш характеризуется сравнительно высокой минерализацией воды. Общая водосборная площадь озера составляет примерно 1800000 га. Наибольшая глубина в западной части озера 14,0 м (Бухта Бертыс), средняя – 4,5 м, в восточной части максимальные глубины наблюдаются в самом дальнем восточном плесе – 23 м, средняя глубина составляет 7,1 м [3].

Бассейн озера Балкаш, находящийся в центральной части Евразии, в тысячах километрах от океанов, особенно остро испытывает на себе цикличные изменения климата. Только расположение озера на высокогорных областях спасает его от довольно частых периодических катаклизмов и обусловливает сравнительно небольшую амплитуду межгодового колебания стока рек и уровня воды в озере.

Среднегодовой уровень воды в озере за последние 27 лет колебался в пределах 1,66 м (рисунок 1). С 1998 г. по 2021 г. в бассейне в целом сохранялась увлажненная фаза климата. При этом наиболее низкий уровень воды наблюдался в 1998 г. (113 см над нулем графика), а наиболее высокий – в 2018 г. (279 см). В 2025 г. уровень воды сравнялся со средними многолетними показателями.

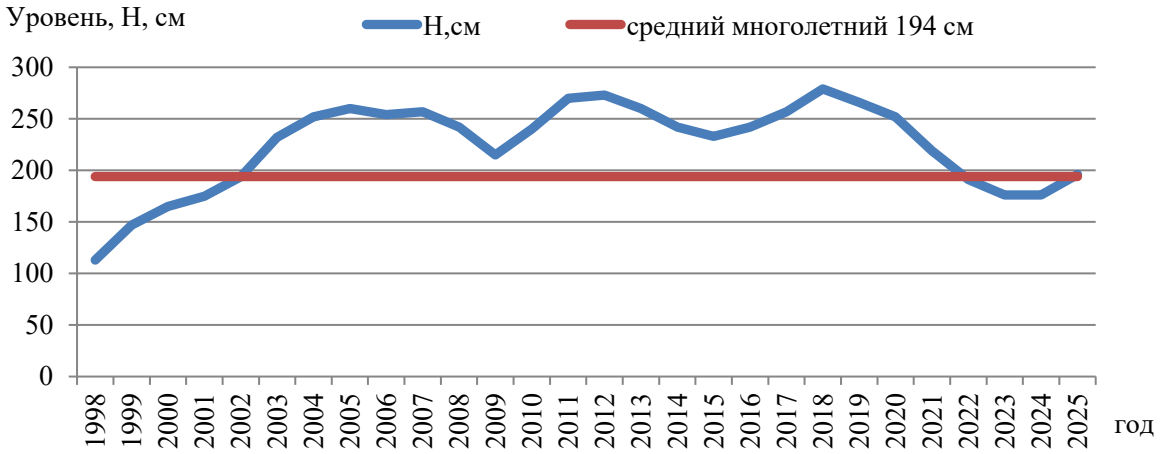

Рисунок 1 – Колебания среднегодового значения уровня воды в озере за 1998–2025 годы

Гидрологический режим влияет на физические и гидрохимические показатели среды обитания гидробионтов. Экологическое состояние водной среды ухудшается во время падения уровня воды и, наоборот, улучшается при его повышении [4–6].

Зоопланктон, один из представителей кормовых объектов, всегда представлял научный интерес как индикатор экологического состояния водоемов [7–11]. Изменения водной среды оказывают существенное влияние, как на качественный состав зоопланктона, так и на его количественные показатели.

В данной статье представлен анализ современного состояния зоопланктона при снижении уровня воды в оз. Балкаш в сравнении с 2018 г., характеризующимся повышенным уровенным режимом. Однако для достоверности математических расчетов зависимости структурных показателей зоопланктона от некоторых параметров использовались данные за период 2018–2025 гг.

Материал и методы исследования.

Отбор и обработку зоопланктона проводили в соответствии с общепринятыми методиками [12, 13]. Сбор материала осуществлялся на 60 постоянных станциях по всей акватории оз. Балкаш. При глубинах более 2,0 м зоопланктон облавливался сетью Джеди тотально от дна до поверхности, при глубинах менее 2,0 м – процеживанием 100 л воды, отобранной из поверхностного слоя, через сеть Апштейна. Фиксация проб проводилась смесью 96 % спирта и 40 % формалина в пропорции 1:1. Фиксатор приливали в пробы с таким расчетом, чтобы получился 4 % раствор. В лабораторных условиях пробы обрабатывались в камере Богорова, просчитывались и измерялись все виды организмов. При расчётах индивидуального веса зоопланктёров применялись уравнения линейно-весовой зависимости. Численность и масса зоопланктона рассчитывалась на 1 м^3 водной толщи.

Идентификация и счет организмов производился с применением микроскопов МБС–10 и МСХ–300 по соответствующим определителям [14–17].

Результаты исследований, обсуждение. Зоопланктон оз. Балкаш в 2025 г. был представлен 47 таксонами, где 23 отнесены к коловраткам, 13 – к ветвистоусым и 11 – к веслоногим рачкам. По результатам съемки в 2018 г., зоопланктон был сложен 54 таксонами, из них 37 видов коловратки, 7 – ветвистоусые и 10 – веслоногие рачки (таблица 1).

Таблица 1

Таксономический список и частота встречаемости (%)
зоопланктонных организмов в оз. Балкаш в 2018 и 2025 годах

Таксон	2018 г.		2025 г.	
	Западный Балкаш	Восточный Балкаш	Западный Балкаш	Восточный Балкаш
Rotifera – Коловратки				
Notommata aurita Muller	6,7	-	-	-
N. allantois Wulfert	3,3	-	-	-
N. pseudocerberus Beauchamp	-	-	5	-
N. cyrtopus Gosse	-	-	-	14
Cephalodella gibba gibba Ehrenberg	3,3	-	-	-
Trichocerca (s. str.) *pusilla* (Lauterborn)	-	-	5	-
Eosphora najas Ehrenberg	-	6,7	-	-
E. ehrenbergi Weber	-	-	5	-
Ascomorpha ecaudis Perty	3,3	-	-	-
Synchaeta pectinata Ehrnberg	-	-	5	-
S. oblonga Ehrenberg	-	-	-	7
Polyarthra major Burckhardt	13,3	3,3	5	-
P. remata Skorikov	10	10	-	-
Dicranophorus forcipatus Muller	6,7	-	-	-
Asplancha sieboldi (Leydig)	-	-	5	-
Lecane (s. str.) *luna luna* Muller	6,7	3,3	5	-
L. (s. str.) *luna presumta* Ahlstrom	-	3,3	-	7
L. (M.) *closterocerca* Schmarda	3,3	-	-	-
L. (M.) *bula bula* Gosse	10	-	-	-
L. (M.) *lunaris* Ehrnberg	3,3	-	-	-
Habrotrocha bidens Gosse	3,3	-	11	7
Dissotrocha aculeata aculeata Ehrenberg	10	-	5	-
Adineta gracilis Janson	3,3	-	-	-
Trichotria truncata truncate Whitelegge	6,7	-	-	-
T. pocillum pocillum Muller	-	-	5	7
Lophocharis rubens Wulfert	3,3	-	-	-
Euchlanis dilatata dilatata Leydig	10	3,3	11	14
E. lyra lyra Hudson	3,3	-	-	-
E. pyriformis Gosse	3,3	-	5	14
E. deflexa deflexa Gosse	-	-	5	7
E. incise Carlin	3,3	-	-	-
Brachionus quadridentatus melheni Barrois et Daday	3,3	-	-	-
B. q. hyphalmuros Tschugunoff	-	3,3	-	-
B. q. ancylognathus Schmarda	-	3,3	16	-
B. q. brevispinus Ehrenberg	-	-	5	-
B. q. zernovi Voronkov	3,3	-	-	-
B. plicatilis longicornis Fadeev	-	16,7	-	14
B. p. plicatilis Muller	3,3	6,7	-	-
B. calyciflorіs spinosus Wierzejski	3,3	-	-	-
Platyias guadricornis guadricornis Ehrenberg	3,3	-	-	-
P. patulus patulus Muller	3,3	-	-	-
Keratella cochlearis cochlearis Gosse	-	26,7	5	14
K. c. robusta Lauterborn	-	10	-	-
K. quadrata quadrata Muller	6,7	-	-	-
Testudinella patina patina Hermann	-	-	11	-
Anuraeopsis fissa fissa Gosse	3,3	3,3	14	-
Hexarthra oxyuris Zernov	-	30	5	14
H. fennica Levander	3,3	-	-	-
Итого 48	*29*	*14*	*19*	*11*
Cladocera – Ветвистоусые				
Sida grystalline (Muller)	3,3	-	5	-
Diaphanosoma lacustris Korinek	93,3	83,3	69	86
Daphnia galeata Sars	10	76,7	5	50
Ceriodaphnia laticaudata O. F. Muller	-	-	-	7

Ilyocryptus agilis Kurz	-	-	5	-
Acroperus harpae (Baird)	-	-	5	-
Chydorus sphaericus Muller	6,7	-	16	7
Alona quadrangularis Leydig	3,3	-	-	-
A. affinis Leydig	-	-	-	7
A. costata Sars	3,3	-	5	7
A. guttata Sars	-	-	5	14
A. rectangula Sars	6,7	-	32	21
Bosmina longirostris O. F. Muller	-	-	5	-
Leptodora kindtii Focke	-	-	-	7
Итого 14	*7*	*2*	*10*	*9*
Copepoda – Веслоногие				
Arctodiaptomus salinus Baird	90	100	100	100
Eucyclops macrurus Sars	-	-	-	7
E. serrulatus Fischer	3,3	-	-	-
E. denticulatus Graeter	3,3	-	-	7
Paracyclops fimbriatus Fischer	-	-	5	7
Cyclops vicinus Uljanin	-	-	5	-
Acanthocyclops venustus Norman et Scott	-	-	5	-
Mesocyclops leuckarti Claus	90	76,7	84	93
M. ogunnus Onabamiro	-	3,3	-	-
Thermocyclops crassus Fischer	66,7	100	79	93
T. taihokuensis Harada	3,3	-	11	14
T. oithonoides Sars	6,7	-	-	-
Erqasilus gen. sp.	16,7	16,7	5	21
Harpacticoida gen. sp.	3,3	3,3	32	21
Итого 14	*9*	*6*	*9*	*9*
Всего 76	45	22	38	29

Основу зоопланктона по всей акватории озера, как в 2018 г., так и в 2025 г., составили *D. lacustris, A. salinus, M. leuckarti* и *T. crassus* (частота встречаемости 67–100 %). Ветвистоусый рачок *D. galeata* в западной части озера почти не встречался, в восточной же явился одним из доминантов (частота встречаемости 50–77 %).

Разнообразие зоопланктона озера на 49–69 % составляли коловратки, приуроченные, в основном, к прибрежной зоне заливов и приустьевым участкам рек. Однако они встречались единично, поэтому показатель частоты их встречаемости довольно низкий. Наиболее распространены по западной части *P. major, L. l. luna, E. d. dilatata* (10-13,3 % встречаемости), по восточной – *P. remata, B. p. longicornis, K. c. cochlearis, H. oxyuris* (10-30 %).

Снижение уровня воды в озере повлекло изменение гидрохимических параметров среды обитания – в большей степени это сказалось на минерализации, содержанию биогенных элементов и органического вещества. Так, в 2025 г. нитраты повысились по западной части в 1,9 раз, по восточной – в 1,5 раз. Содержание органического вещества по биотопам увеличилось в 1,3 и 1,5 раз. Повысилась минерализация воды – в 1,1–1,2 раза.

Одними из основных факторов, влияющими на развитие и распространение зоопланктона, являются температурный режим и обеспеченность пищей [18]. Температура за рассматриваемый период менялась скачкообразно – с минимумом по западной части в 2022 г. (23,1˚С), по восточной в 2018 г. (23˚С) и максимумом соответственно в 2018 г. (26,4˚С) и в 2023 г. (26,1˚С).

Анализ показал, что к 2025 г. из видового состава Западного Балкаша выпали 26 видов, где 85 % составили коловратки. В таксономию 2025 г. вошли новых 19 видов, на 63 % представленные коловратками. По восточной части озера 10 видов заместились 16 видами. Коэффициент Серенсена [19, 20] между биотопами двух сравниваемых лет составил 0,46 по Западному Балкашу и 0,43 по Восточному.

Корреляция между количеством видов и некоторыми физическими и химическими параметрами показали достаточно высокую отрицательную зависимость с показателями минерализации (-0,69) и содержанием органического вещества (-0,82) в Западном Балкаше и положительную зависимость с содержанием фосфора (0,86) в Восточном Балкаше. По нитратам выявлена разнополярная связь – в западной части озера отрицательная (-0,44), в восточной – положительная (0,42). Высокий уровень положительной зависимости количества видов от уровня воды (0,73) прослеживается только по западной части озера (рисунок 2, 3). Зависимость количества видов от температуры воды незначительна.

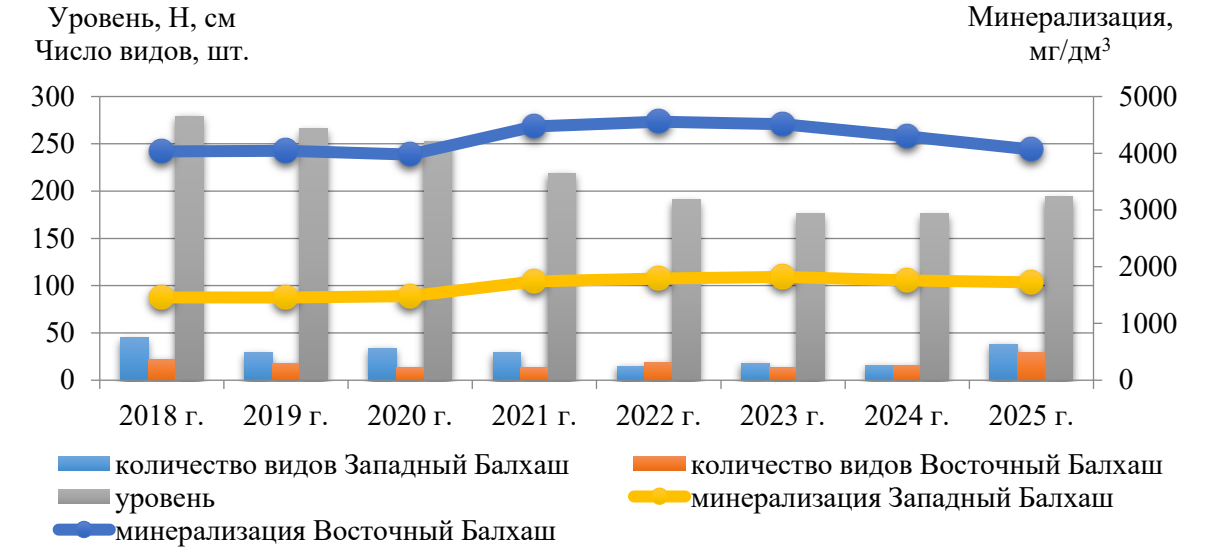

Рисунок 2 – Зависимость числа видов зоопланктона от уровня воды и минерализации

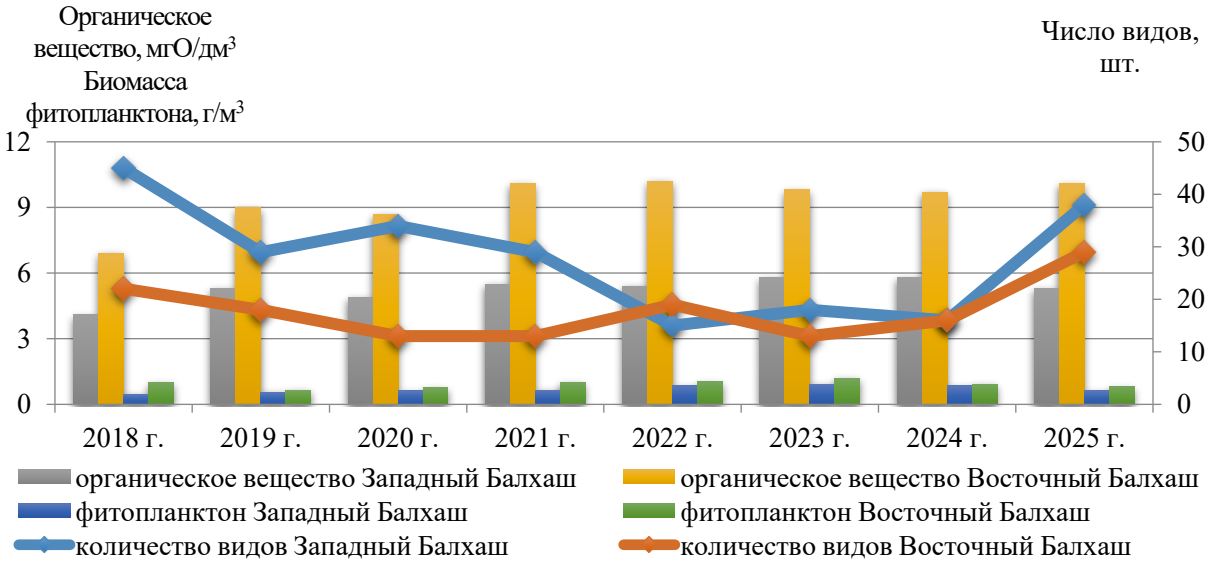

Рисунок 3 – Зависимость числа видов зоопланктона от органического вещества и биомассы фитопланктона

Одним из основных источников питания зоопланктона является фитопланктон. За период 2018–2025 гг. биомасса водорослей по западному биотопу варьировала от 0,470 г/м^3 (2018 г.) до 0,923 г/м^3 (2023 г.), по восточному – от 0,653 г/м^3 (2019 г.) до 1,192 г/м^3 (2023 г.). Зависимость количества видов от биомассы фитопланктона определила высокую отрицательную связь (-0,91) только в западной части озера (рисунок 3).

Показатели количественного развития зоопланктона к 2025 г. снизились, как по Западному Балкашу, так и по Восточному – на 17–60 % по численности и 34–62 % по биомассе. Доминирующей группой по численности по всей акватории озера, как в 2018 г., так и в 2025 г., были веслоногие рачки – 66,3–75 %. Основу биомассы планктеров в 2018 г. по западу создавали обе группы ракообразных – 46,8–53,1 %, по востоку преобладали ветвистоусые – 57,6 %. В 2025 г. по Западному Балкашу биомассу формировали веслоногие – 72,3 %, по Восточному – обе группы рачков – 50,5–49,5 % (таблица 2).

Таблица 2

Количественное развитие зоопланктона оз. Балкаш в 2018 и 2025 годах,
где ч – численность, тыс.экз./м^3; б – биомасса, г/м^3

Год	Коловратки		Ветвистоусые		Веслоногие		Всего	
	ч	б	ч	б	ч	б	ч	б
Западный Балхаш								
2018	1,910	0,002	17,211	0,670	35,263	0,760	54,384	1,432
2025	0,350	0,001	8,960	0,260	35,883	0,680	45,193	0,941
Восточный Балхаш								
2018	2,590	0,004	21,292	1,203	49,354	0,883	73,236	2,090
2025	0,310	<0,001	8,952	0,40	19,948	0,392	29,21	0,792
В среднем по озеру								
2018	2,250	0,003	19,252	0,936	42,308	0,822	63,810	1,761
2025	0,330	0,001	8,956	0,330	27,916	0,535	37,202	0,866

За рассматриваемый период (2018 г. и 2025 г.) среди доминирующих видов наибольшее значение при формировании количественных показателей имели диаптомус и диафаносома (рисунок 4).

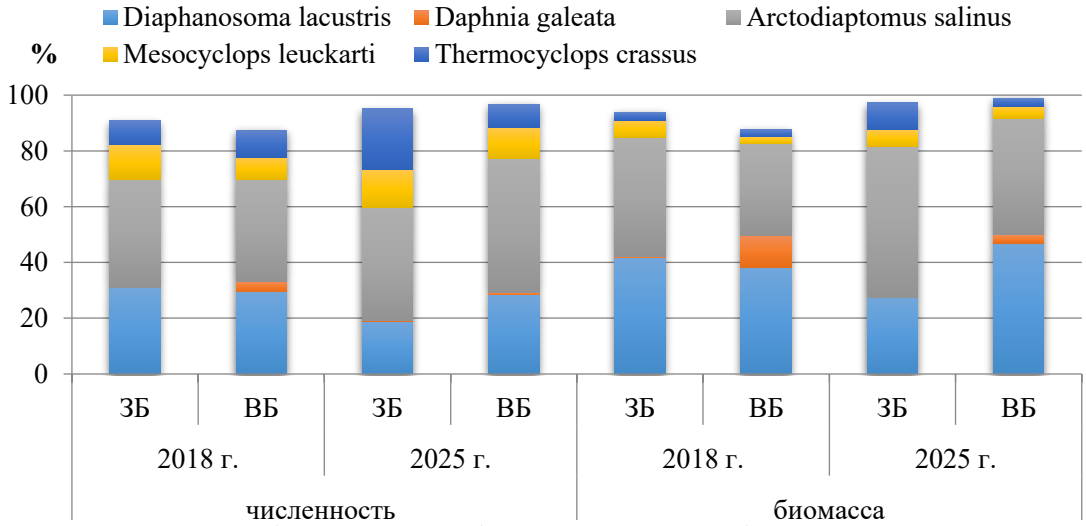

Рисунок 4 – Долевое участие доминирующих видов зоопланктона в создании количественных показателей

В 2018 г. доля диафанасомы в среднем по озеру составила по численности 30,2 %, по биомассе – 40,1 %, доля диаптомуса – 37,6 % и 37,8 % соответственно. В 2025 г. долевое участие диафанасомы несколько ниже – 23,7 и 37,1 %, процент вложения диаптомуса возрос – 44,4 % и 48,0 % соответственно. Повысилась роль мезоциклопса по всей акватории озера с 10,3 % до 12,3 %. Термоциклопс в 2018 г., как в западной части, так и в восточной, занимал равноценную долю – 8,6–9,6 %, в 2025 г. его роль в Западном Балкаше возросла до 21,7 %, тогда как в Восточном осталась на уровне 2018 г.

Продуктивность озера в 2018 г. соответствовала уровню умеренного класса α-мезотрофного типа. В восточной части уровень несколько выше – среднего класса β-мезотрофного типа, за счет включения в массу взрослых особей кладоцер и копепод. Однако средний показатель по озеру (1,761 г/м^3) не превысил уровня умеренного класса α-мезотрофного типа [21]. В 2025 г. уровень биопродуктивности озера на всем протяжении соответствовал низкому классу β-олиготрофного типа за счет снижения численности диафанасомы.

Математические расчеты зависимости структурных показателей зоопланктона от химических параметров, температуры и развития фитопланктона показали следующее – достаточно значимая отрицательная зависимость определилась между численностью и биомассой зоопланктона Восточного Балкаша и содержанием органического вещества (-0,49 и -0,69) (рисунок 5), содержанием нитратов (-0,43 и -0,61), фосфором (-0,68 и -0,40).

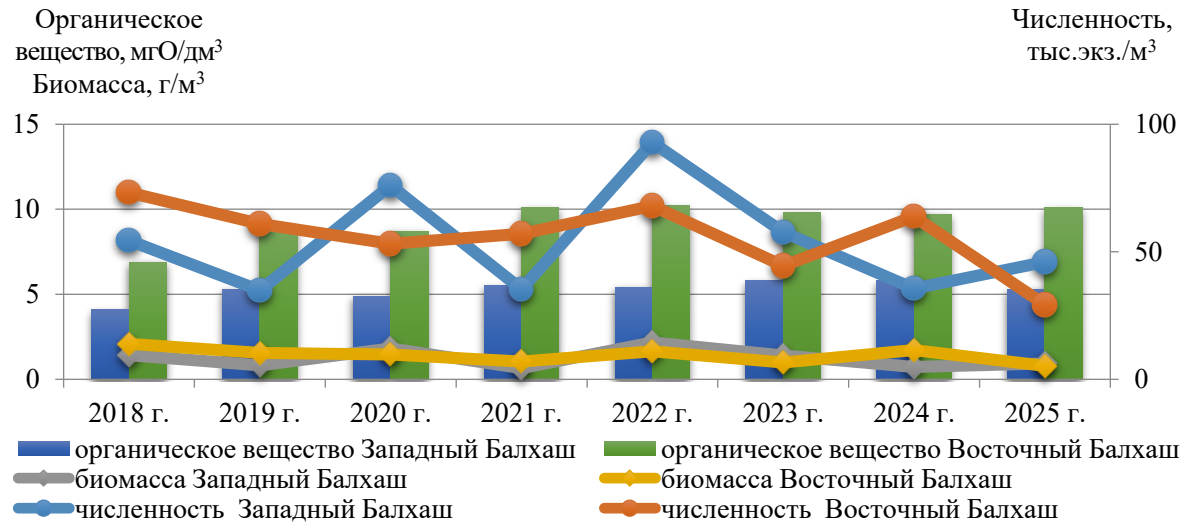

Рисунок 5 – Зависимость количественных показателей зоопланктона от органического вещества

Биомасса зоопланктона в западной и восточной частях озера, а также численность на западе водоема отрицательно коррелировали с изменением температуры воды. Корреляционной зависимости численности и биомассы зоопланктона от развития фитопланктона, а также от минерализации, как в Западном, так и в Восточном Балкаше не выявлено. Взаимосвязь с показателями уровня воды прослеживается только с биомассой зоопланктона восточной части оз. Балкаш (0,50).

Заключение. Снижение уровня воды в оз. Балкаш повлекли за собой изменение гидрохимических параметров, которые сказались не только на количественных показателях зоопланктона, но и на его таксономическом составе. Снижение видового разнообразия зоопланктона в оз. Балкаш отмечено после 2018 г., когда уровень воды стал неуклонно падать. Из таксономического списка практически ежегодно выпадали зарослевые формы ветвистоусых и веслоногих рачков, пресноводные коловратки. За период 2018–2025 гг. сокращение видов составило более 42 %. В видовом составе стали преобладать более солелюбивые виды. В то же время, фоновыми видами так и остались 5 видов – *D. lacustris, A. salinus, M. leuckarti, T. crassus* и *D. galeata*.

Количественное развитие зоопланктона к 2025 г. снизились, как по Западному Балкашу, так и по Восточному – на 17–60 % по численности и 34–62 % по биомассе. Доминирующими группами были ветвистоусые и веслоногие рачки, однако к 2025 г. отмечается преобладание веслоногих ракообразных, в основном, солоноватоводного арктодиаптомуса.

Математические расчеты зависимости структурных показателей зоопланктона от химических параметров, температуры, уровня воды и развития фитопланктона показали следующее: высокая степень зависимости с уровнем воды, минерализацией, органическим веществом и биомассой фитопланктона прослеживается только по западной части озера. В восточной части озера наиболее высокая корреляция зафиксирована с содержанием фосфора. Достаточно значимая связь определилась между численностью и биомассой зоопланктона Восточного Балкаша и содержанием органического вещества, содержанием нитратов, фосфором. Корреляционной зависимости численности и биомассы зоопланктона от развития фитопланктона, а также от минерализации, как в Западном, так и в Восточном Балкаше не выявлено. Взаимосвязь с уровнем воды прослеживается только с биомассой зоопланктона восточной части оз. Балкаш.

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ECONOMIC SCIENCES

BOARD STRUCTURE AND RISK OVERSIGHT EFFECTIVENESS IN STATE-OWNED ENTERPRISES: EVIDENCE FROM CHINA COSCO SHIPPING CORPORATION LIMITED

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Abstract

Effective risk oversight is essential for state-owned enterprises (SOEs) operating in complex and capital-intensive industries. Board structure plays a critical role in shaping governance quality and ensuring robust risk management practices. This paper examines how board composition, committee structure, and oversight mechanisms influence risk oversight effectiveness in state-owned enterprises, using China COSCO Shipping Corporation Limited as an illustrative case. Drawing on corporate governance theory and risk management frameworks, the study analyzes the roles of independent directors, specialized committees, and internal control systems in strengthening risk supervision. The analysis indicates that a structured board system supported by audit and risk management committees enhances transparency, accountability, and organizational resilience. The findings suggest that effective board design improves risk monitoring and strategic decision-making, contributing to sustainable performance in large state-owned enterprises.

Keywords: Board Structure; Risk Oversight; State-Owned Enterprises; Corporate Governance; COSCO Shipping.

1. Introduction

State-owned enterprises operate in environments characterized by complex stakeholder relationships, strategic national responsibilities, and large-scale capital investments. These features increase exposure to financial, operational, and geopolitical risks. As a result, effective governance and risk oversight are critical for safeguarding public assets and ensuring sustainable performance.

Board structure is a central component of corporate governance. It defines decision-making authority, supervisory mechanisms, and accountability systems. Research suggests that effective boards enhance organizational performance by strengthening oversight and improving strategic guidance (Tricker, 2019).

China COSCO Shipping Corporation Limited, a state-owned multinational maritime transportation conglomerate headquartered in Shanghai, was formed through the merger of COSCO Group and China Shipping Group in 2016 and operates globally in shipping, logistics, and port management.

Given its scale and strategic importance, COSCO Shipping provides a valuable case for examining how board structure influences risk oversight effectiveness in state-owned enterprises.

2. Corporate Governance and Board Structure in State-Owned Enterprises

Corporate governance refers to the system by which organizations are directed and controlled, including the roles of boards, management, and stakeholders. In SOEs, governance structures must balance commercial objectives with public accountability.

Board effectiveness depends on structure, independence, expertise, and committee specialization. Independent directors improve monitoring quality and reduce conflicts of interest, while diverse expertise enhances strategic decision-making (Aguilera et al., 2015).

In large SOEs, boards often establish specialized committees—such as audit, risk management, and nomination committees—to enhance governance effectiveness. These committees support detailed oversight and strengthen internal control processes.

3. Board Structure and Governance Practices at COSCO Shipping

The board of COSCO Shipping is responsible for overseeing major corporate matters, including strategic planning, internal control, and risk management systems.

The board also monitors management performance and corporate governance practices.

To enhance governance effectiveness, COSCO Shipping has established multiple board committees, including audit, remuneration, nomination, corporate

governance, strategic development, and risk management committees.

The board retains overall responsibility for maintaining effective risk management and internal control systems to safeguard assets and shareholder interests.

Such committee structures allow specialized oversight and support the board in addressing complex operational and financial risks.

4. Risk Oversight Framework and Board Responsibilities

Risk oversight involves identifying, assessing, and monitoring risks that may affect organizational objectives. Effective oversight requires coordination between the board, committees, and management.

At COSCO Shipping, the board delegates risk monitoring responsibilities to the Risk Management Committee and Audit Committee, which review risk management and internal control systems.

The company applies a structured risk management framework based on the "three lines of defence" model, integrating risk control with business operations.

This model includes operational management, risk management units, and internal audit functions.

Table 1 summarizes the relationship between board structure and risk oversight effectiveness.

Table 1.

Board Structure Elements and Risk Oversight Functions

Board Structure Element	Oversight Role	Risk Management Contribution
Independent directors	Objective supervision	Enhances transparency and accountability
Audit committee	Financial reporting & control review	Strengthens compliance and internal controls
Risk management committee	Risk identification & monitoring	Improves risk mitigation and resilience
Strategic committee	Oversight of major investments	Reduces strategic and operational risks
Internal audit linkage	Independent evaluation	Ensures effectiveness of risk controls

5. How Board Structure Enhances Risk Oversight Effectiveness

Board structure influences risk oversight effectiveness through several mechanisms.

First, committee specialization improves monitoring efficiency. Risk management committees provide focused attention on operational and strategic risks, allowing timely identification and response.

Second, independent oversight strengthens accountability. Independent directors improve governance transparency and ensure that management decisions align with stakeholder interests.

Third, structured reporting and internal control systems enhance risk visibility. Effective internal controls reduce fraud risk and improve compliance (COSO, 2017).

Finally, board oversight supports risk-informed strategic decision-making. By integrating risk analysis into strategic planning, boards enhance organizational resilience and long-term sustainability.

6. Challenges in Risk Oversight within State-Owned Enterprises

Despite governance improvements, SOEs face unique challenges in risk oversight. Government ownership may introduce political priorities that complicate decision-making. Bureaucratic procedures can slow responses to emerging risks.

In addition, the scale and international operations of enterprises like COSCO Shipping increase exposure to geopolitical, regulatory, and market risks. Effective board oversight must therefore balance strategic objectives with risk control.

Strengthening board independence, enhancing professional expertise, and adopting global governance standards can improve oversight effectiveness.

7. Conclusion

Board structure plays a critical role in strengthening risk oversight effectiveness in state-owned enterprises. Evidence from COSCO Shipping demonstrates that specialized committees, independent oversight, and structured internal control systems enhance risk monitoring and organizational resilience.

By aligning governance mechanisms with risk management frameworks, state-owned enterprises can improve transparency, safeguard public assets, and enhance long-term sustainability. Effective board design not only strengthens risk control but also supports strategic decision-making in complex and uncertain operating environments.

Future research may explore the role of digital governance tools and data-driven risk monitoring systems in further enhancing board-level risk oversight.

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THE ROLE OF SOCIAL PRESENCE IN ENHANCING USER ENGAGEMENT IN LIVE-STREAMING E-COMMERCE: A CASE STUDY OF DOUYIN E-COMMERCE

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Abstract

Live-streaming e-commerce has changed online shopping from a simple transaction into a more social and interactive experience. Douyin E-Commerce is a typical example because it combines short videos, live streaming, product recommendation, and online shopping. This paper discusses how social presence enhances user engagement in Douyin E-Commerce. Social presence means that users feel they are interacting with real people in a digital environment. Based on previous studies and a small pilot-style data analysis, this paper finds that streamer presence, real-time interaction, and community atmosphere can improve users' trust, viewing time, participation, and purchase intention. The study suggests that Douyin E-Commerce should improve streamer authenticity, interaction quality, and community management to strengthen long-term user engagement.

Keywords: social presence; user engagement; live-streaming e-commerce; Douyin E-Commerce; consumer trust.

1. Introduction

With the growth of mobile internet and short video platforms, e-commerce has become more interactive. In traditional e-commerce, consumers mainly depend on product pictures, descriptions, prices, and reviews. However, in live-streaming e-commerce, users can watch product demonstrations, ask questions, read real-time comments, and communicate with streamers.

Douyin E-Commerce is a representative platform in this field. Users may first enter Douyin for entertainment, but they may later join live rooms and make purchases because of product recommendations and streamer explanations. Therefore, user engagement is very important for Douyin E-Commerce.

Customer engagement includes users' cognitive, emotional, and behavioral participation in a platform or brand (Brodie et al., 2011). In Douyin E-Commerce, engagement can be shown through watching, liking, commenting, following, sharing, and purchasing. This paper focuses on one question: How does social presence enhance user engagement in Douyin E-Commerce?

2. Literature Review

Social presence refers to the degree to which users feel the existence of others in online communication (Short et al., 1976). In live-streaming e-commerce, social presence is created when users see the streamer, hear product explanations, read other viewers' comments, and receive real-time responses.

Previous studies show that live streaming can increase consumer trust and engagement. Wongkitrungrueng and Assarut (2020) argued that live streaming helps build trust between sellers and consumers. Sun et al. (2019) also found that interactivity and visibility in live streaming can influence purchase intention.

In Douyin E-Commerce, social presence can be understood from three aspects. First, streamer presence means users feel the streamer is real, professional, and close to them. Second, interaction presence means users feel their questions and comments can receive responses. Third, community presence means users feel they are shopping together with other viewers. These three aspects can make the shopping experience more real and engaging.

3. Data Analysis

This paper uses a small pilot-style survey to support the discussion. The survey was designed for users who had watched live-streaming shopping on Douyin. A five-point Likert scale was used, where 1 means "strongly disagree" and 5 means "strongly agree." The following data are illustrative pilot data from 110 respondents.

Variable	Measurement Item	Mean Score	Result
Streamer presence	The streamer makes the product introduction feel real.	4.20	High
Interaction presence	I am more engaged when my questions are answered quickly.	4.28	Very high
Community presence	Other viewers' comments make the live room more active.	4.05	High
Trust	Social presence increases my trust in the live room.	4.16	High
Viewing engagement	A strong live atmosphere makes me stay longer.	4.30	Very high
Participation engagement	I am more willing to comment, like, or follow when I feel involved.	4.18	High
Purchase intention	Social presence increases my willingness to buy.	4.08	High

The table shows that users generally have a positive attitude toward social presence in Douyin E-Commerce. The highest score is viewing engagement, with a mean score of 4.30. This means that when users feel a strong live atmosphere, they are more likely to stay longer in the live room.

Interaction presence also receives a high score of 4.28. This shows that users do not want to be passive viewers only. They want to ask questions, receive answers, and feel that they are part of the live room. Purchase intention receives a score of 4.08, which means social presence can support purchase behavior, but it usually works through trust and emotional involvement.

4. Discussion and Managerial Suggestions

The analysis shows that social presence is an important factor in improving user engagement. First, streamer presence makes online shopping feel more real. Compared with product pictures and text descriptions, live demonstrations allow users to see the product more directly.

Second, real-time interaction increases participation. When users' questions are answered quickly, they feel noticed and respected. This can encourage them to comment, like, follow, and stay longer.

Third, community presence creates a group shopping atmosphere. Other viewers' comments can influence users' feelings and reduce uncertainty. When many users discuss a product, the live room becomes more active and persuasive.

For Douyin E-Commerce, social presence should be managed as a platform capability. First, the platform should strengthen streamer training, including product knowledge, communication skills, and service awareness. Second, merchants should prepare clear product information before live sessions. Third, Douyin should encourage real comments and reduce exaggerated promotion, because false interaction may damage user trust.

5. Conclusion

This paper studied the role of social presence in enhancing user engagement in live-streaming e-commerce, using Douyin E-Commerce as a case study. The findings show that streamer presence, interaction presence, and community presence can improve users' trust, viewing time, participation, and purchase intention. For Douyin E-Commerce, social presence is not only a communication feature, but also an important management resource. Improving social presence can help the platform increase user retention, build consumer trust, and strengthen long-term competitiveness. Future research can use larger survey data and regression analysis to further test the relationship between social presence and user engagement.

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TRAINING SYSTEM DESIGN AND ATHLETE DEVELOPMENT OUTCOMES

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Abstract

The effectiveness of training system design plays a decisive role in shaping athlete development outcomes across competitive sports. Modern sports organizations increasingly rely on structured, evidence-based training frameworks to enhance performance, reduce injury risk, and support long-term athlete development. This study examines how training system design influences athlete development outcomes, focusing on key elements such as periodization, multidisciplinary support, psychological preparation, and performance monitoring. Drawing on existing literature and industry practices, the paper proposes an integrated training system framework that aligns physiological, technical, and psychological development. Findings suggest that well-structured training systems improve performance consistency, accelerate skill acquisition, and enhance athlete resilience. However, challenges remain in balancing performance pressure, recovery needs, and individualized development pathways. This study provides practical insights for sports organizations, coaches, and performance managers seeking to optimize training systems and athlete outcomes.

Keywords: training system design, athlete development, performance optimization, sports science, long-term athlete development

1. Introduction

In contemporary competitive sports, athlete performance is no longer determined solely by talent and effort. Instead, structured training systems play a critical role in shaping long-term development, performance consistency, and injury prevention. As sports become increasingly professionalized and science-driven, organizations invest heavily in training system design to maximize athlete potential and sustain competitive advantage.

Training systems encompass the planning, organization, and evaluation of physical conditioning, technical skill development, tactical preparation, and psychological readiness. Effective systems ensure that training loads, recovery cycles, and skill progression are aligned with athletes' developmental stages (Bompa & Buzzichelli, 2019). Poorly designed systems, by contrast, may lead to overtraining, burnout, or stagnation in performance.

This paper explores how training system design influences athlete development outcomes and identifies key components that contribute to effective training environments.

2. Literature Review

Training system design is grounded in sports science, performance management, and athlete development theory. Periodization theory suggests that training should be structured into cycles to optimize performance while preventing fatigue and injury (Issurin, 2010). Structured progression allows athletes to reach peak performance at key competitive moments.

Long-term athlete development (LTAD) models emphasize age-appropriate training, progressive skill acquisition, and holistic development (Balyi & Hamilton, 2004). These models highlight that athlete development is a multi-stage process requiring coordinated physical, technical, and psychological preparation.

Research also demonstrates the importance of multidisciplinary support, including nutrition, sports psychology, and medical monitoring, in enhancing performance outcomes and recovery capacity (Reilly, 2007). Furthermore, data-driven performance monitoring systems enable coaches to adjust training loads and improve decision-making.

Despite these advancements, scholars emphasize that training systems must remain adaptable and individualized to accommodate differences in physiology, maturity, and psychological resilience (Smith, 2003).

3. Methodology

This study adopts a conceptual and analytical approach based on a review of sports science literature and professional training practices. Secondary sources from academic journals, coaching manuals, and sports performance research were synthesized to identify essential components of effective training systems and their relationship to athlete development outcomes.

This approach enables the development of an integrated framework linking training design elements with measurable performance outcomes.

4. Key Components of Training System Design

Effective training systems integrate multiple components that collectively influence athlete development.

A fundamental element is structured periodization, which organizes training into macrocycles, mesocycles, and microcycles. This structure ensures progressive workload adaptation while allowing sufficient recovery periods. Proper periodization helps prevent overtraining and supports peak performance timing.

Technical and tactical training form the core of performance development. Systematic skill progression enhances movement efficiency, decision-making ability, and competitive readiness. Repetition combined with game-simulated practice improves skill retention and tactical awareness.

Physical conditioning programs enhance strength, endurance, flexibility, and speed. Conditioning must align with sport-specific demands to improve performance efficiency while reducing injury risk.

Psychological preparation has gained increasing recognition as a determinant of performance outcomes. Mental resilience, focus, motivation, and stress management are essential for sustaining performance under competitive pressure.

Performance monitoring and data analytics enable coaches to track workload, fatigue levels, and performance indicators. Technology-assisted monitoring supports evidence-based adjustments to training intensity and recovery planning.

Table 1.

Core Elements of Training System Design and Their Impact

Training Component	Key Functions	Impact on Athlete Outcomes
Periodization Planning	Structured workload & recovery cycles	Prevents overtraining and enhances peak performance
Technical & Tactical Training	Skill acquisition and decision-making	Improver competitive effectiveness
Physical Conditioning	Strength, endurance, speed	Enhances performance capacity and injury prevention
Psychological Training	Mental resilience & focus	Improves performance under pressure
Performance Monitoring	Data tracking & evaluation	Supports evidence-based training adjustments

5. Training Systems and Athlete Development Outcomes

A well-designed training system supports multiple dimensions of athlete development. First, structured workload management improves physiological adaptation and reduces injury risk. Athletes exposed to progressive training loads demonstrate improved endurance, strength, and recovery capacity.

Second, systematic skill development accelerates technical mastery and tactical intelligence. Athletes trained within structured systems exhibit higher consistency in performance and improved decision-making during competition.

Third, psychological training enhances resilience and emotional regulation, which are essential for maintaining performance under pressure. Mental preparation also supports motivation and long-term commitment to training.

Fourth, performance monitoring systems allow individualized training adjustments. Data-driven feedback enables coaches to tailor programs according to athlete needs, improving training efficiency and reducing performance plateaus.

However, excessive training intensity without adequate recovery may lead to burnout, overuse injuries, and decreased motivation. Therefore, effective training systems must balance workload, recovery, and athlete well-being.

6. Discussion

The relationship between training system design and athlete development outcomes highlights the importance of integrating sports science principles with practical coaching strategies. Organizations that adopt structured training systems benefit from improved performance consistency, reduced injury rates, and enhanced athlete longevity.

Multidisciplinary collaboration is essential for optimizing training outcomes. Cooperation among coaches, sports scientists, physiotherapists, and psychologists enables comprehensive athlete support. Such integrated approaches are increasingly adopted by elite sports organizations.

Individualization remains a critical consideration. Athletes differ in physical maturity, learning pace, and psychological resilience. Training systems must be flexible enough to accommodate these differences while maintaining structured progression.

Technological advancements continue to reshape training system design. Wearable sensors, performance analytics, and recovery monitoring tools enable real-time decision-making and personalized training optimization.

7. Conclusion

Training system design plays a fundamental role in shaping athlete development outcomes. Effective systems integrate periodization, skill development, physical conditioning, psychological preparation, and performance monitoring. Such integrated approaches enhance performance consistency, reduce injury risk, and support long-term athlete development. However, training systems must balance workload demands with recovery needs and individual differences to ensure sustainable athlete growth. The findings provide valuable guidance for sports organizations and performance managers seeking to optimize training systems in increasingly competitive sporting environments.

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THE ROLE OF EMOTIONAL EXPERIENCES IN ENHANCING SUBJECTIVE WELL-BEING OF ELDERLY TOURISTS

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Abstract

As global populations age, promoting psychological well-being among older adults has become an important social and public health priority. Tourism is increasingly recognized as a meaningful activity that contributes to emotional fulfillment and life satisfaction in later life. This paper examines the role of emotional experiences in enhancing subjective well-being among elderly tourists. Drawing upon theories of emotional experience, experiential consumption, and successful aging, the study explores how positive emotions such as joy, nostalgia, relaxation, and social warmth generated during travel contribute to life satisfaction and psychological resilience. The paper synthesizes existing research and proposes a conceptual linkage between emotional tourism experiences and cognitive and affective components of well-being. Findings suggest that emotionally enriching travel experiences can reduce loneliness, strengthen social bonds, and enhance overall life satisfaction among older adults. Implications for designing emotionally meaningful and age-friendly tourism experiences are discussed.

Keywords: elderly tourism, emotional experience, subjective well-being, life satisfaction, active aging.

1. Introduction

Population aging is reshaping demographic structures worldwide, bringing increased attention to the well-being and quality of life of older adults. Beyond physical health and financial security, emotional fulfillment and social connectedness are essential elements of successful aging. Tourism has emerged as an important leisure activity that allows seniors to engage with new environments, cultures, and people, thereby enriching emotional life and promoting psychological well-being.

Subjective well-being (SWB) refers to individuals' evaluations of their lives, including both cognitive judgments such as life satisfaction and affective experiences such as happiness and emotional balance (Diener et al., 1999). For elderly individuals, maintaining positive emotional states is particularly important because aging often involves life transitions such as retirement, reduced social roles, or bereavement.

Travel experiences can evoke powerful emotions, including joy, nostalgia, serenity, and social warmth. These emotional responses play a central role in shaping travel satisfaction and long-term well-being outcomes. This paper explores how emotional experiences during tourism contribute to subjective well-being among elderly tourists.

2. Emotional Experience and Subjective Well-being

Emotions are fundamental to human experience and influence how individuals evaluate life events. Positive emotions such as joy, relaxation, and contentment contribute directly to subjective well-being, while also helping individuals cope with stress and adversity (Fredrickson, 2001). The broaden-and-build theory suggests that positive emotions expand individuals' thought–action repertoires and build enduring psychological resources.

For older adults, emotional regulation becomes increasingly important. Research suggests that seniors tend to prioritize emotionally meaningful experiences and relationships, a concept explained by socioemotional selectivity theory (Carstensen, 1992). Tourism experiences that foster emotional satisfaction may therefore have a particularly strong impact on well-being in later life.

Subjective well-being consists of both affective and cognitive components. Emotional experiences contribute to immediate happiness and also shape long-term life satisfaction through memory and reflection.

3. Emotional Dimensions of Tourism Experiences among Elderly Touris ts

Tourism experiences are inherently emotional. For elderly travelers, emotional responses are shaped by comfort, social interaction, cultural meaning, and personal memories. Emotional experiences can be categorized into several key dimensions.

Joy and excitement emerge from discovering new places and engaging in enjoyable activities. Relaxation and serenity arise when travel provides relief from routine stress and offers restorative environments such as beaches, parks, or cultural heritage sites. Nostalgia is often triggered when elderly tourists revisit familiar destinations or encounter cultural elements that evoke

memories of earlier life stages. Social warmth develops through meaningful interactions with travel companions, tour groups, and local residents. Finally, a sense of accomplishment and self-worth can arise from overcoming travel challenges and maintaining independence.

Table 1.

Emotional Experiences in Tourism and Their Psychological Effects

Emotional Experience	Travel Context	Contribution to Well-being
Joy & Excitement	Sightseeing, cultural activities	Enhances happiness and vitality
Relaxation	Nature settings, leisure environments	Reduces stress and anxiety
Nostalgia	Heritage sites, familiar traditions	Strengthens identity and meaning
Social Warmth	Group travel, community interaction	Reduces loneliness
Sense of Achievement	Independent travel participation	Builds confidence and self-worth

These emotional responses play a crucial role in shaping the overall tourism experience and influencing psychological outcomes.

4. Emotional Experiences and Well-being Outcomes

Positive emotional experiences during travel contribute to emotional well-being by generating pleasure, relaxation, and inner peace. Such experiences can counteract stress and negative emotions often associated with aging-related challenges.

Tourism also enhances social well-being. Emotional connections formed during travel foster a sense of belonging and support, which are essential for mental health. Older adults who engage in socially enriching travel experiences often report reduced loneliness and improved emotional resilience.

Emotional memories formed during travel play a significant role in cognitive evaluations of life satisfaction. Meaningful travel experiences provide stories, memories, and personal achievements that reinforce a sense of purpose and fulfillment.

Furthermore, emotional well-being is closely linked to perceived health. Positive emotional states can enhance optimism and psychological resilience, contributing to overall well-being.

5. Discussion

Emotional experiences are central to understanding how tourism contributes to well-being in later life. Unlike material consumption, tourism experiences generate emotional and symbolic value that can have lasting psychological benefits. Positive emotions experienced during travel broaden perspectives, encourage social engagement, and strengthen psychological resources.

Older adults often seek emotionally meaningful experiences rather than purely novelty-driven travel. Cultural engagement, interpersonal connection, and peaceful environments may therefore provide deeper satisfaction than high-intensity activities. Emotional experiences also interact with personal history, cultural background, and travel motivations, shaping individual perceptions of well-being.

Tourism providers should recognize the importance of emotional design in creating meaningful experiences. Destinations that foster comfort, nostalgia, social interaction, and emotional safety can significantly enhance well-being outcomes for elderly tourists.

6. Managerial Implications

Tourism stakeholders can enhance elderly tourists' emotional well-being by designing travel experiences that promote comfort, relaxation, and emotional connection. Creating peaceful environments, incorporating cultural storytelling, and providing opportunities for social interaction can enrich emotional experiences.

Tour operators should design slower-paced itineraries that allow time for reflection and enjoyment. Staff training should emphasize empathy, patience, and emotional sensitivity when serving older travelers. Programs that encourage intergenerational interaction and community engagement can further strengthen emotional fulfillment.

Incorporating heritage experiences, music, traditional cuisine, and cultural rituals can evoke nostalgia and deepen emotional meaning. By focusing on emotional value rather than purely functional service delivery, tourism providers can better support the well-being of elderly travelers.

7. Conclusion

Emotional experiences play a crucial role in enhancing subjective well-being among elderly tourists. Joy, relaxation, nostalgia, social warmth, and a sense of achievement contribute to emotional satisfaction, life meaning, and psychological resilience. As aging populations continue to grow, tourism that prioritizes emotional enrichment and age-friendly design will become increasingly important.

Future research should empirically examine the relationship between emotional tourism experiences and well-being across diverse cultural contexts. A deeper understanding of emotional dynamics in elderly tourism will support sustainable tourism development and promote healthy and fulfilling aging.

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DIGITAL TOURISM EXPERIENCE QUALITY AND TOURIST SATISFACTION

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Abstract
The rapid integration of digital technologies into tourism services has transformed how travelers plan, experience, and evaluate their journeys. Digital tools such as mobile applications, virtual tours, smart destination platforms, and real-time service interfaces have become central to tourism experiences. This paper examines the relationship between digital tourism experience quality and tourist satisfaction. Drawing on service quality theory, experience economy concepts, and technology acceptance perspectives, the study explores how usability, personalization, interactivity, information reliability, and system integration shape tourists' perceptions and satisfaction outcomes. The analysis suggests that high-quality digital experiences enhance convenience, reduce uncertainty, and improve emotional engagement, thereby strengthening overall satisfaction. The paper proposes a conceptual framework linking digital experience quality to satisfaction and behavioral intentions, and it concludes with managerial implications for designing user-centered digital tourism ecosystems.
Keywords: digital tourism, experience quality, tourist satisfaction, smart tourism, service quality.

1. Introduction

Digital transformation has reshaped the tourism industry by altering how travelers access information, make decisions, and interact with destinations. Mobile technologies, online booking platforms, smart tourism systems, and immersive digital content have become integral components of contemporary travel experiences. Tourists increasingly rely on digital interfaces throughout the travel journey, from pre-trip planning to post-trip sharing.

Tourist satisfaction remains a key indicator of service success and destination competitiveness. Satisfaction is shaped not only by physical service encounters but also by digital interactions that influence convenience, expectations, and perceived value. As tourism becomes increasingly technology-enabled, digital experience quality plays a critical role in shaping tourists' overall perceptions.

This paper explores how digital tourism experience quality influences tourist satisfaction and identifies the key dimensions that contribute to positive user experiences in smart tourism environments.

2. Digital Transformation in Tourism Experiences

Digital technologies have transformed tourism into an information-intensive and interactive service ecosystem. Online travel agencies, mobile navigation tools, and destination apps enable tourists to plan itineraries, access real-time updates, and make reservations with ease. Smart tourism destinations integrate digital infrastructure such as QR-based ticketing, augmented reality (AR) guides, and intelligent transportation systems to enhance visitor experiences.

Digital interfaces function as service touchpoints that influence travelers' perceptions of efficiency, reliability, and enjoyment. Research indicates that technology-mediated service encounters can significantly affect user satisfaction and service evaluation (Neuhofer et al., 2014). Digital platforms reduce information asymmetry and enhance decision confidence, contributing to positive travel experiences.

Furthermore, immersive technologies such as virtual reality (VR) previews and interactive storytelling enhance emotional engagement and destination appeal. These tools enable travelers to visualize experiences before visiting, shaping expectations and satisfaction outcomes.

3. Dimensions of Digital Tourism Experience Quality

Digital tourism experience quality refers to tourists' evaluation of digital interfaces and technology-mediated services encountered during travel. Unlike traditional service quality, digital experience quality emphasizes usability, interactivity, personalization, and system reliability.

Usability refers to the ease of navigating digital platforms. Clear interfaces and intuitive design reduce cognitive effort and improve user satisfaction. Information quality is equally important; accurate, timely, and relevant information helps tourists make informed decisions and reduces uncertainty.

Personalization enhances perceived value by tailoring recommendations based on preferences and

travel behavior. Interactivity, including real-time feedback, chat support, and interactive maps, increases engagement and user control. System reliability and integration ensure seamless connectivity across booking systems, transportation services, and destination platforms.

Table 1.

Dimensions of Digital Tourism Experience Quality

Dimension	Description	Impact on Tourist Satisfaction
Usability	Ease of navigation and interface clarity	Reduces frustration and improves convenience
Information Quality	Accuracy and timeliness of content	Builds trust and decision confidence
Personalization	Customized recommendations	Enhances perceived value
Interactivity	Real-time support and engagement	Increases involvement and enjoyment
System Reliability	Stable and integrated platforms	Ensures seamless travel experience

These dimensions collectively shape digital service perceptions and influence satisfaction outcomes.

4. Digital Experience Quality and Tourist Satisfaction

High-quality digital experiences enhance tourist satisfaction by improving convenience and efficiency. Digital tools simplify trip planning, navigation, and reservations, reducing time costs and uncertainty. When tourists perceive digital platforms as reliable and easy to use, their overall travel experience becomes smoother and more enjoyable.

Digital technologies also strengthen emotional engagement. Interactive maps, immersive content, and virtual storytelling create richer experiences that enhance enjoyment and destination attachment. Emotional engagement contributes significantly to satisfaction and positive travel memories.

Moreover, real-time information updates improve service reliability. Notifications regarding transportation schedules, weather conditions, and crowd levels enable tourists to adjust plans effectively. Such responsiveness enhances perceived control and reduces stress during travel.

Digital experience quality also influences perceived value. When digital services save time, provide personalized recommendations, and streamline processes, tourists perceive higher value for their travel expenditures.

5. The Role of Digital Experience in Post-Trip Evaluation

Digital tourism experiences extend beyond the travel period. Tourists frequently share experiences through social media, review platforms, and digital photo sharing. These post-trip digital interactions reinforce memory formation and influence overall satisfaction.

Positive digital experiences encourage favorable online reviews and word-of-mouth recommendations, which are critical for destination competitiveness. Studies indicate that satisfaction with digital service touchpoints significantly influences revisit intentions and loyalty behaviors (Buhalis & Amaranggana, 2015).

Digital ecosystems also facilitate continuous engagement between destinations and visitors through loyalty programs, personalized offers, and travel communities.

6. Challenges in Delivering High-Quality Digital Tourism Experiences

Despite its advantages, digital transformation presents several challenges. Technological complexity and system failures can disrupt travel experiences and reduce satisfaction. Poorly designed interfaces or inaccurate information may increase frustration.

Digital inequality is another concern. Older travelers or visitors with limited digital literacy may face difficulties using smart tourism systems. Privacy and data security issues also influence trust in digital platforms.

Destinations must balance technological innovation with usability, accessibility, and data protection to ensure inclusive and trustworthy digital experiences.

7. Managerial Implications

Tourism organizations should prioritize user-centered digital design to enhance usability and accessibility. Simplified interfaces, multilingual support, and clear navigation improve user experience across diverse visitor groups.

Investing in real-time information systems and integrated platforms enhances reliability and convenience. Personalization features powered by data analytics can improve service relevance and perceived value.

Training staff to support digital service use and providing alternative service options can ensure inclusivity. Destinations should also implement robust data protection measures to build user trust.

By focusing on seamless digital ecosystems, tourism stakeholders can strengthen satisfaction and destination competitiveness.

8. Conclusion

Digital tourism experience quality has become a critical determinant of tourist satisfaction in the era of smart tourism. High-quality digital interfaces enhance convenience, engagement, and perceived value while reducing uncertainty and stress. Usability, information reliability, personalization, interactivity, and system integration collectively shape digital experience quality.

As tourism continues to digitalize, designing inclusive and user-centered digital ecosystems will be essential for improving visitor satisfaction and fostering loyalty. Future research should empirically examine digital experience quality across cultural contexts and demographic groups to better understand its long-term effects on travel behavior.

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LEADERSHIP AND CHANGE READINESS IN INTEGRATED MEDICAL AND ELDERLY CARE ORGANIZATIONS

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Abstract

The rapid development of integrated medical and elderly care organizations requires continuous organizational adaptation. However, the success of transformation initiatives largely depends on employees' readiness for change. Leadership plays a critical role in shaping such readiness, particularly in complex service environments where professional boundaries and organizational cultures intersect. This study explores the relationship between leadership behaviors and change readiness in integrated medical and elderly care organizations. Drawing on transformational leadership theory and change readiness literature, this paper adopts a qualitative case-based analysis combined with survey insights from frontline staff and middle managers. The findings indicate that leadership communication, participative decision-making, and vision articulation significantly influence employees' cognitive and emotional acceptance of change. The study provides practical implications for healthcare–elderly care institutions undergoing structural integration and contributes to the growing literature on leadership in hybrid service organizations.

Keywords: Leadership; Change Readiness; Integrated Care; Organizational Transformation; Healthcare Management.

1. Introduction

Population aging has accelerated the need for innovative service models combining healthcare and long-term elderly care. Integrated medical and elderly care organizations aim to provide coordinated, continuous services for older adults. While structural integration may be supported by policy frameworks and financial incentives, internal organizational change remains challenging.

One critical factor influencing the success of organizational transformation is change readiness. Change readiness refers to the degree to which organizational members are psychologically and behaviorally prepared to implement change (Armenakis et al., 1993). In integrated care settings, professionals from different backgrounds—physicians, nurses, caregivers, and administrative staff—must adapt to new workflows and collaborative structures.

Leadership has been widely recognized as a determinant of successful change processes (Kotter, 1996). However, limited research has examined leadership's specific influence on change readiness within integrated medical and elderly care organizations. This study addresses this gap by analyzing how leadership behaviors affect employees' readiness during organizational transformation.

2. Literature Review

2.1 Leadership and Organizational Change

Leadership is central to organizational transformation. Transformational leadership theory suggests that leaders who articulate a compelling vision, provide individualized consideration, and inspire motivation are more effective in driving change (Bass, 1985). Such leaders help employees understand the purpose of change and reduce uncertainty.

Kotter (1996) emphasizes that successful change begins with establishing urgency and communicating a clear vision. Without leadership commitment and consistent messaging, employees may resist change due to fear or ambiguity.

2.2 Change Readiness

Change readiness is often conceptualized as a multi-dimensional construct including cognitive belief in change necessity, emotional acceptance, and behavioral intention to support change (Holt et al., 2007).

Employees who perceive change as beneficial and aligned with organizational goals are more likely to demonstrate cooperative behavior. In healthcare-related institutions, readiness is influenced by professional identity and perceived competence (Weiner, 2009).

In integrated care organizations, readiness is particularly complex because medical and caregiving professionals may hold different perspectives on service priorities and authority structures.

3. Research Design

This study combines qualitative interviews with a structured questionnaire distributed to employees in integrated medical and elderly care institutions. The research focuses on three leadership dimensions:

1) Vision Communication
2) Participative Leadership
3) Supportive Leadership Behavior

Change readiness was measured across three aspects: belief in change necessity, emotional support for change, and willingness to participate in change initiatives.

4. Findings

4.1 Leadership Behaviors Observed

Interviews revealed that employees were more receptive to change when leaders clearly explained the strategic rationale behind integration. Vision clarity reduced uncertainty and improved alignment between departments.

Participative leadership—such as involving staff in workflow redesign discussions—enhanced psychological ownership of change. Employees expressed greater willingness to cooperate when their suggestions were considered.

Supportive leadership behavior, including training opportunities and workload adjustments, alleviated stress during transition periods.

4.2 Relationship Between Leadership and Change Readiness

Survey responses indicated a positive association between leadership behaviors and change readiness indicators. Table 1 summarizes the observed relationships.

Table 1.

Leadership Dimensions and Change Readiness Outcomes

Leadership Dimension	Cognitive Readiness	Emotional Acceptance	Behavioral Support
Vision Communication	High	Moderate to High	High
Participative Leadership	Moderate	High	High
Supportive Leadership	Moderate	High	Moderate to High

Vision communication primarily influenced employees' understanding of why change was necessary. Participative leadership strengthened emotional commitment. Supportive leadership reduced resistance by addressing practical concerns.

5. Discussion

The findings support transformational leadership theory (Bass, 1985) and align with Kotter's (1996) argument that leadership communication is fundamental to change success. In integrated medical and elderly care organizations, leadership must bridge professional cultures.

Change readiness is not solely a cognitive assessment of change benefits; it also involves emotional and relational trust. Leaders who demonstrate empathy and transparency build psychological safety, which is essential during organizational restructuring.

Moreover, readiness appears to increase when employees perceive that change enhances service quality for elderly residents. This suggests that aligning change narratives with professional values improves acceptance.

6. Managerial Implications

First, leaders should clearly articulate the long-term vision of integrated care, linking change initiatives to improved patient outcomes.Second, participative mechanisms—such as interdisciplinary committees—should be established to enhance shared ownership.Third, leadership training programs should focus on communication skills and conflict management, particularly in hybrid service organizations.Finally, management should monitor employee readiness levels regularly to identify early signs of resistance.

7. Conclusion

This study examined the role of leadership in shaping change readiness within integrated medical and elderly care organizations. The results indicate that leadership behaviors significantly influence employees' cognitive, emotional, and behavioral responses to organizational transformation.

As healthcare systems continue to evolve, effective leadership will remain a key determinant of sustainable integration. Future research may adopt longitudinal designs to examine readiness over different stages of transformation.

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DIGITAL TECHNOLOGY ADOPTION AND PROCESS OPTIMIZATION IN STATE-OWNED ENTERPRISES

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Abstract

Digital technology adoption has become a strategic imperative for state-owned enterprises (SOEs) seeking to enhance operational efficiency, transparency, and service delivery in an increasingly complex economic environment. As public-sector organizations confront rising expectations for efficiency and accountability, digital transformation provides tools to streamline workflows, reduce costs, and improve decision-making. This study examines how digital technology adoption contributes to process optimization in SOEs. Drawing on existing literature and institutional practices, the paper analyzes the role of automation, data integration, digital platforms, and intelligent analytics in improving organizational processes. The findings suggest that digital adoption improves workflow efficiency, reduces administrative redundancy, enhances transparency, and supports data-driven governance. However, legacy systems, institutional inertia, and limited digital capabilities continue to constrain transformation outcomes. This study contributes to understanding digital process optimization in public-sector enterprises and offers managerial insights for improving efficiency and governance performance.

Keywords: digital technology adoption, process optimization, state-owned enterprises, operational efficiency, digital governance.

1. Introduction

State-owned enterprises play a vital role in national economic development, infrastructure provision, and public service delivery. However, many SOEs operate within complex administrative structures that can result in bureaucratic inefficiencies, fragmented information flows, and slow decision-making processes. In the digital economy era, governments worldwide encourage SOEs to adopt digital technologies to enhance operational performance and governance transparency.

Digital transformation refers to the integration of digital technologies into organizational operations to improve efficiency, decision-making, and value creation. It represents a fundamental restructuring of how organizations operate and deliver services. For SOEs, digital adoption is not merely a technological upgrade but a governance modernization process.

Process optimization—improving workflows to eliminate redundancy and enhance productivity—has become a central objective of digital transformation. Digital tools enable automation, real-time data access, and improved coordination, allowing organizations to streamline processes and reduce operational waste.

This paper examines how digital technology adoption facilitates process optimization in state-owned enterprises and identifies key mechanisms driving efficiency improvements.

2. Literature Review

Digital technology adoption has been widely recognized as a driver of organizational efficiency and productivity. Research shows that digital transformation improves production efficiency and resource allocation through enhanced data integration and technological innovation. Digitalization also improves economic efficiency by reducing information asymmetry and improving market coordination.

Digital technologies reshape traditional processes by enabling higher efficiency, adaptability, and data-driven decision-making. Automation, analytics, and digital platforms streamline workflows and reduce redundancy, thereby improving operational efficiency.

Process optimization is a strategic approach to improving efficiency and reducing costs through workflow redesign and automation. Business process re-engineering (BPR) emphasizes restructuring workflows and decision-making processes to achieve major performance improvements.

Despite these benefits, digital transformation in SOEs often faces institutional constraints, including legacy systems, rigid organizational structures, and resistance to change.

3. Methodology

This study employs a conceptual analytical approach based on a review of academic literature, policy frameworks, and professional practices in digital transformation and process management.

Secondary sources were synthesized to identify core digital technologies adopted by SOEs and to evaluate their impact on process optimization. The analysis focuses on understanding mechanisms through which digital adoption improves workflow efficiency and organizational coordination.

4. Digital Technology Adoption in State-Owned Enterprises

State-owned enterprises increasingly adopt digital technologies to modernize management processes and improve service delivery. Key digital adoption areas include automation, data integration, digital platforms, and intelligent analytics.

Automation technologies such as robotic process automation (RPA) reduce repetitive manual tasks and improve accuracy in administrative and financial processes. Automation minimizes processing time and reduces human error, particularly in routine workflows.

Data integration platforms connect previously fragmented information systems across departments. By enabling real-time data sharing, integration improves coordination, eliminates duplication, and enhances decision-making speed.

Digital management platforms enable online workflow processing, document management, and project tracking. These platforms enhance transparency and allow supervisors to monitor progress and compliance in real time.

Advanced analytics and artificial intelligence support predictive decision-making by analyzing operational data. Data-driven insights help optimize resource allocation, forecast demand, and improve planning accuracy.

Table 1.

Digital Technologies and Process Optimization Outcomes in SOEs

Digital Technology	Process Function	Optimization Impact
Robotic Process Automation	Automates repetitive tasks	Reduces errors and processing time
Data Integration Systems	Cross-department information sharing	Improves coordination and reduces duplication
Digital Workflow Platforms	Online approvals & monitoring	Enhances transparency and efficiency
AI & Data Analytics	Predictive decision support	Improver planning and resource allocation
Cloud Computing	Centralized data access	Enables collaboration and real-time access

5. Process Optimization Outcomes

Digital technology adoption contributes to process optimization across multiple dimensions. First, workflow automation reduces administrative burdens and processing delays. Routine tasks such as approvals, documentation, and reporting can be completed more quickly and accurately, improving operational efficiency. Second, integrated data systems enhance organizational coordination. Real-time data sharing eliminates information silos and enables faster decision-making. Third, digital platforms improve transparency and accountability. Supervisors can track processes, identify bottlenecks, and ensure compliance with regulatory requirements. Fourth, data analytics enhances strategic planning. Predictive insights support better resource allocation, risk management, and operational planning.

Operational efficiency improves when workflows are streamlined and redundant processes eliminated, leading to cost reduction and productivity gains.

However, challenges persist. Legacy systems complicate integration, while insufficient digital skills and organizational resistance may slow adoption. Effective change management and workforce training are critical for successful transformation.

6. Discussion

Digital technology adoption represents a transformative opportunity for state-owned enterprises to improve efficiency and governance performance. By optimizing workflows and enhancing transparency, digital transformation strengthens organizational accountability and service delivery.

Successful process optimization requires more than technology deployment. Organizational processes must be redesigned to align with digital workflows. Business process re-engineering principles support restructuring workflows to maximize efficiency gains.

Leadership commitment and institutional support are critical to overcoming resistance to change. Training programs and digital literacy initiatives enable employees to adapt to new systems.

Digital transformation also aligns with broader public-sector modernization goals. Improved efficiency and transparency contribute to better public service delivery and strengthen public trust in state-owned enterprises.

7. Conclusion

Digital technology adoption plays a critical role in process optimization within state-owned enterprises. Automation, data integration, digital platforms, and analytics streamline workflows, enhance transparency, and improve decision-making. While digital transformation offers significant efficiency gains, successful implementation requires organizational restructuring, workforce adaptation, and strong governance frameworks. The findings provide valuable insights for policymakers and SOE managers seeking to enhance efficiency and accountability through digital modernization.

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GENERATIONAL DIFFERENCES IN THE IMPACT OF TRAINING AND PERFORMANCE MANAGEMENT PRACTICES ON EMPLOYEE ENGAGEMENT

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Abstract

Employee engagement has become an important concern for organizations that want to improve productivity, innovation, and employee retention. However, employees from different generations may respond differently to training and performance management practices. This paper discusses how generational differences influence the relationship between training, performance management, and employee engagement. Based on human capital theory, social exchange theory, and generational cohort theory, the paper argues that training and performance management can improve engagement when employees perceive them as supportive, fair, and useful for personal development. However, older employees may value stability, respect, and practical skill improvement, while younger employees may pay more attention to career growth, feedback, autonomy, and learning opportunities. Therefore, organizations should avoid using a single HRM approach for all employees and should develop more flexible and differentiated management practices.

Keywords: generational differences; employee engagement; training; performance management; human resource management.

1. Introduction

In many organizations, employees from different generations now work together. Senior employees may have rich experience and strong organizational loyalty, while younger employees may bring new knowledge, digital skills, and stronger expectations for career development. This generational diversity creates both opportunities and management challenges. Training and performance management are two key human resource management practices. Training helps employees improve knowledge, skills, and confidence. Performance management helps clarify goals, evaluate work results, and provide feedback. When these practices are well designed, they can improve employee engagement. However, employees from different age groups may not interpret the same HR practice in the same way. For example, older employees may prefer practical training related to their current job and may value respectful feedback from supervisors. Younger employees may prefer flexible learning, digital courses, coaching, and frequent feedback. Therefore, this paper examines the role of generational differences in the impact of training and performance management practices on employee engagement.

2. Theoretical Basis

Human capital theory suggests that training is an investment in employees' knowledge, skills, and productive capacity (Becker, 1993). When employees feel that the organization invests in their development, they may become more capable and more willing to contribute. Social exchange theory provides another explanation. According to Blau (1964), when employees receive valuable support from the organization, they tend to respond with positive attitudes and behaviors. Training opportunities, fair evaluation, and useful feedback can be understood as organizational support. This support may lead to higher engagement. Generational cohort theory argues that people who grow up in different historical and social environments may develop different values, work expectations, and communication styles. Although generational labels should not be used too rigidly, they can help managers understand why employees may respond differently to HRM practices (Twenge, 2010). Employee engagement refers to a positive work-related state characterized by energy, dedication, and involvement. Kahn (1990) proposed that engagement occurs when employees feel meaningfulness, safety, and availability at work. Training and performance management can influence these psychological conditions.

3. Training Practices and Employee Engagement

Training can improve employee engagement by increasing competence and confidence. When employees believe they have the skills needed to complete their work, they are more likely to feel motivated. Training also shows that the organization values employee development, which can strengthen commitment. However, the effect of training may differ by generation.

Older employees may prefer training that is practical, face-to-face, and directly related to problem-solving. They may not want training that makes them feel outdated or pressured by new technology. Therefore, training for older employees should respect their experience and connect new skills with existing knowledge. Younger employees may expect more frequent learning opportunities. They often value career development, digital learning platforms, mentoring, and clear skill growth paths. If training is boring, too formal, or unrelated to future promotion, younger employees may not feel engaged. Therefore, training should not be designed only as a standard course. It should be flexible and connected with employees' career stage, learning habits, and job needs.

4. Performance Management and Employee Engagement

Performance management can influence engagement by clarifying expectations, giving feedback, and linking effort with recognition. A fair and transparent performance system can help employees understand what the organization expects and how their work contributes to business goals. For senior employees, performance management should emphasize respect, fairness, and recognition of accumulated contribution. If evaluation focuses only on short-term indicators and ignores experience, mentoring, or knowledge transfer, older employees may feel undervalued. For younger employees, performance management should provide timely feedback and development guidance. They may prefer continuous feedback rather than only annual appraisal. They also care about whether performance results are linked to career advancement, learning opportunities, and meaningful rewards.

A poorly designed performance system may reduce engagement. If employees feel that evaluation is unfair, unclear, or only used for punishment, they may become passive. Therefore, performance management should be developmental, not only administrative.

5. Generational Differences in HRM Effects

Generational differences do not mean that every employee in the same age group has the same needs. However, they remind managers that employee engagement is influenced by career stage, personal values, and work expectations. The same HR practice may create different psychological responses.

Table 1.

Generational Differences in Training and Performance Management Needs

Employee Group	Training Preference	Performance Management Preference	Engagement Driver
Senior employees	Practical training, face-to-face guidance, respect for experience	Fair evaluation, recognition, stable expectations	Respect, security, professional value
Middle-career employees	Leadership training, cross-functional skills, career transition support	Clear targets, promotion opportunities, balanced workload	Growth, responsibility, work-life balance
Younger employees	Digital learning, coaching, fast skill development	Frequent feedback, transparent promotion, autonomy	Development, meaning, recognition

This table shows that organizations should use differentiated HRM practices. Senior employees may be engaged through respect and recognition. Middle-career employees may be engaged through growth opportunities and responsibility. Younger employees may be engaged through learning, autonomy, and feedback.

6. Managerial Implications

First, organizations should design layered training systems. Basic job training, digital skills training, leadership training, and mentoring programs should be provided to different employee groups according to their needs. Second, performance management should move from annual appraisal to continuous communication. Managers should provide regular feedback, not only final scores. This is especially important for younger employees who expect timely guidance. Third, organizations should encourage intergenerational learning. Senior employees can share experience and organizational knowledge, while younger employees can support digital skills and new methods. This can reduce generational misunderstanding and improve teamwork. Fourth, HR managers should avoid stereotypes. Generational differences are useful for analysis, but employees should still be treated as individuals. Personal career goals, job type, ability level, and family situation should also be considered.

7. Conclusion

Training and performance management are important drivers of employee engagement, but their effects may vary across generations. Older employees may value respect, stability, practical learning, and recognition of experience, while younger employees may value career growth, frequent feedback, autonomy, and digital learning. Middle-career employees may focus more on promotion, responsibility, and work-life balance. This paper argues that organizations should adopt a flexible and differentiated HRM approach. Training should be practical, continuous, and career-oriented. Performance management should be fair, transparent, and developmental. When HRM practices match employees' generational needs and career stages, employee engagement can be improved more effectively.

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THE RELATIONSHIP BETWEEN EMPLOYEE TRAINING EFFECTIVENESS AND SERVICE QUALITY IN TOURISM ENTERPRISES: EVIDENCE FROM HUANGSHAN TOURISM DEVELOPMENT CO., LTD

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Abstract

Employee training plays an important role in improving service quality in tourism enterprises. Taking Huangshan Tourism Development Co., Ltd. as the case background, this paper discusses how effective employee training influences service quality. In tourism enterprises, employees directly face tourists, so their knowledge, skills, attitude, and problem-solving ability strongly affect tourist experience. Based on training evaluation theory and service quality theory, this paper argues that effective training can improve service reliability, responsiveness, assurance, and empathy. The study suggests that tourism enterprises should focus not only on training frequency, but also on training transfer, practical service scenarios, and continuous evaluation.

Keywords: employee training; training effectiveness; service quality; tourism enterprises; Huangshan Tourism Development Co., Ltd.

1. Introduction

Tourism enterprises are highly service-oriented. Tourists judge a company not only by its scenic resources or facilities, but also by the behavior of frontline employees. For Huangshan Tourism Development Co., Ltd., which is involved in scenic area operation, hotels, cableways, catering, and travel services, employee service quality directly affects tourist satisfaction and corporate image. Employee training is therefore an important way to improve service quality. However, training should not be measured only by the number of training sessions. More importantly, it should be judged by whether employees can apply what they have learned in real service situations.

2. Literature Review

Employee training refers to planned activities that improve employees' knowledge, skills, and work attitudes. Noe (2020) argued that training is an important method for improving employee performance. Aguinis and Kraiger (2009) also pointed out that training can bring benefits to individuals, teams, and organizations.

Training effectiveness is often evaluated through employees' reaction, learning, behavior change, and final results. Kirkpatrick and Kirkpatrick's four-level model provides a useful framework for understanding whether training really works (Kirkpatrick & Kirkpatrick, 2006).

Service quality is commonly measured by reliability, responsiveness, assurance, empathy, and tangibles. Parasuraman, Zeithaml, and Berry (1988) suggested that customers evaluate service quality through both service results and service processes. In tourism enterprises, this means that employees' service behavior is a key part of tourist experience.

3. Case Analysis

Huangshan Tourism Development Co., Ltd. has different business sectors, so its employees need different types of training. Scenic area employees need safety and tourist guidance training. Hotel employees need service etiquette and complaint-handling training. Cableway employees need technical safety and emergency response training. Catering employees need food safety and communication training.

If training is effective, employees can provide more accurate information, respond faster to tourist needs, and handle service problems more professionally. This can improve tourist satisfaction and strengthen the company's service image.

Table 1

Relationship Between Training Effectiveness and Service Quality

Training Area	Main Content	Service Quality Improvement
Knowledge training	Scenic information, company rules, safety policies	Improves service reliability
Skill training	Communication, complaint handling, service etiquette	Improves responsiveness
Attitude training	Service awareness, patience, responsibility	Improves empathy
Emergency training	Safety drills, crowd control, sudden problem handling	Improves assurance
Evaluation training	Tourist feedback, service performance review	Improves continuous service quality

4. Discussion

Effective training improves service quality mainly through several aspects. First, it improves employees' professional knowledge. In tourism enterprises, employees need to understand scenic area information, ticket rules, safety requirements, hotel services, catering features, transportation arrangements, and local cultural resources. When employees have enough knowledge, they can provide tourists with correct and useful information. This helps reduce confusion during travel and improves the reliability of service. For example, if frontline staff can clearly explain opening hours, cableway arrangements, emergency routes, and nearby service facilities, tourists will feel that the company is professional and trustworthy.

Second, effective training improves employees' communication and problem-solving skills. Tourism services often involve direct contact with tourists, and different tourists may have different expectations, emotions, and problems. Some tourists may ask repeated questions, some may complain about waiting time, and some may need special help during peak seasons. Through communication training, complaint-handling training, and service scenario practice, employees can learn how to respond politely and quickly. This can improve service responsiveness and reduce conflicts between tourists and staff.

Third, training strengthens employees' service attitude and service awareness. Good service quality does not only depend on technical skills, but also depends on employees' patience, responsibility, and emotional expression. When employees understand the importance of tourist experience, they are more likely to show a positive attitude in daily work. A friendly smile, patient explanation, and active help may seem small, but they can strongly influence tourists' overall satisfaction. This is especially important for tourism enterprises because tourists often remember the emotional feeling of the service process.

For Huangshan Tourism Development Co., Ltd., training should be closely connected with real service situations. The company has different business sectors, including scenic area operation, hotels, cableways, catering, and travel services. Therefore, training content should not be too general. Scenic area employees should receive training on tourist guidance, safety management, and emergency response. Hotel employees should focus on service etiquette, room service, and complaint handling. Cableway employees should strengthen technical safety awareness and crowd management ability. Catering employees should receive food safety, local culture, and customer communication training.

Classroom training alone is not enough. If employees only listen to lectures but do not practice, it is difficult for them to apply training content in real work. Therefore, the company should use role play, service case analysis, emergency drills, and on-the-job coaching. For example, managers can design common service situations, such as handling tourist complaints, guiding tourists during bad weather, dealing with lost items, or managing long queues during holidays. Through repeated practice, employees can become more confident and professional in real service situations.

In addition, tourist complaints and online reviews can be used as important training materials. Negative comments are not only problems, but also useful information for service improvement. The company can collect common complaints from tourists and analyze the reasons behind them. Then, these cases can be transformed into training examples for employees. In this way, training becomes more practical and more closely connected with actual service problems.

Overall, employee training should not be treated as a formal human resource activity. It should become a continuous service quality improvement mechanism. For Huangshan Tourism Development Co., Ltd., improving training effectiveness can help employees provide more stable, professional, and warm services. This will not only improve tourist satisfaction, but also support the company's long-term organizational performance and brand image.

5. Conclusion

This paper discussed the relationship between employee training effectiveness and service quality in tourism enterprises, using Huangshan Tourism Development Co., Ltd. as the case background. The analysis shows that effective training can improve employees' knowledge, skills, service attitude, and emergency response ability. These improvements can further enhance service quality and tourist satisfaction. For tourism enterprises, training should not be a formal task, but a long-term management tool. Huangshan Tourism Development Co., Ltd. should build a practical and continuous training system to improve service consistency and organizational performance.

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LEADERSHIP SUCCESSION AND STRATEGIC CONTINUITY: A CASE STUDY OF SHANGHAI MODEL ORGANISMS CENTER, INC

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Abstract

Strategic continuity is a critical concern for pharmaceutical enterprises operating in knowledge-intensive and highly regulated environments. Leadership succession, if poorly managed, may interrupt long-term research agendas, weaken governance stability, and undermine organizational performance. This study examines the relationship between leadership succession and strategic continuity through a case study of Shanghai Model Organisms Center, Inc. Drawing on succession planning theory and strategic management literature, this research adopts a qualitative case study approach based on secondary data analysis. The findings indicate that structured leadership succession mechanisms contribute to strategic continuity by preserving organizational vision, stabilizing decision-making processes, and safeguarding key knowledge assets. The study offers practical implications for pharmaceutical enterprises seeking to manage leadership transitions without compromising long-term strategic objectives.

Keywords: Leadership succession; Strategic continuity; Pharmaceutical enterprises; Corporate governance; Case study.

1. Introduction

Leadership succession represents a pivotal moment in the life cycle of an organization. While leadership change can introduce new perspectives and strategic renewal, it also poses significant risks to strategic continuity, particularly in industries that rely on long-term planning and accumulated expertise. Pharmaceutical enterprises are especially vulnerable to such disruptions due to extended research and development cycles, strict regulatory requirements, and high dependence on specialized scientific and managerial talent.

Strategic continuity refers to an organization's ability to sustain its long-term strategic direction, core objectives, and operational priorities over time, even during periods of leadership transition (Vancil, 1987). In the absence of effective succession planning, leadership changes may lead to abrupt strategic shifts, internal uncertainty, and weakened organizational coherence (Kesner & Sebora, 1994).

Shanghai Model Organisms Center, Inc. (SMOC) operates within the biomedical and pharmaceutical research sector, where leadership decisions directly influence scientific orientation, resource allocation, and compliance management. This study aims to explore how leadership succession influences strategic continuity at SMOC, addressing the following research question: How does leadership succession planning contribute to maintaining strategic continuity in pharmaceutical enterprises?

2. Literature Review

2.1 Leadership Succession in Organizational Contexts

Leadership succession has been widely examined in strategic management and organizational studies. Early research conceptualized succession primarily as a replacement event triggered by executive departure (Vancil, 1987). Subsequent studies emphasized succession as a strategic process involving the identification, development, and integration of future leaders (Rothwell, 2010).

Empirical studies suggest that internally developed successors are more likely to maintain strategic consistency than externally appointed leaders, as they possess deeper organizational knowledge and stronger alignment with existing strategic priorities (Zhang & Rajagopalan, 2010). Conversely, unplanned or abrupt leadership changes are associated with strategic instability and performance volatility (Giambatista et al., 2005).

2.2 Strategic Continuity in Pharmaceutical Enterprises

Strategic continuity is particularly relevant in pharmaceutical enterprises, where organizational strategies are shaped by long-term R&D investment, regulatory approval timelines, and scientific specialization (Henderson et al., 2006). Strategic disruptions during leadership transitions may result in project delays, regulatory risks, or loss of key personnel.

Research indicates that stable leadership structures and consistent strategic direction enhance organizational resilience in complex and uncertain environments (Hannan & Freeman, 1984). Therefore, leadership succession mechanisms that support continuity rather than abrupt change are essential for pharmaceutical organizations.

2.3 Linking Leadership Succession and Strategic Continuity

Existing literature highlights succession planning as a key governance mechanism that connects leadership transitions with strategic continuity. Effective succession planning reduces uncertainty, ensures alignment between new leaders and organizational strategy, and facilitates gradual rather than radical strategic change (Kesner & Sebora, 1994). However, sector-specific analyses, particularly in Chinese pharmaceutical research organizations, remain underexplored.

3. Research Methodology

3.1 Research Design

This study adopts a qualitative case study design, which allows for an in-depth examination of leadership succession processes within a specific organizational context (Yin, 2018). Shanghai Model Organisms Center, Inc. is selected due to its research-intensive nature and its reliance on sustained strategic direction.

3.2 Data Collection

The study is based on secondary data, including publicly available corporate information, industry reports, policy documents, and prior academic studies related to leadership succession and pharmaceutical governance. These sources provide insight into organizational structure, leadership arrangements, and strategic orientation.

3.3 Analytical Framework

To avoid abstract analysis, this study examines leadership succession and strategic continuity across three concrete dimensions: strategic vision consistency, decision-making stability, and knowledge retention. Table 1 outlines the analytical framework applied in this research.

Table 1.

Analytical Dimensions of Leadership Succession and Strategic Continuity

Dimension	Key Indicator	Relevance to Strategic Continuity
Strategic vision consistency	Alignment of successor with long-term goals	Prevents abrupt strategic shifts
Decision-making stability	Continuity of governance processes	Reduces uncertainty during transition
Knowledge retention	Preservation of scientific and managerial expertise	Sustains long-term R&D capability

4. Case Analysis: Shanghai Model Organisms Center, Inc.

Shanghai Model Organisms Center, Inc. functions as a specialized biomedical research organization supporting pharmaceutical innovation and laboratory services. Its strategic orientation emphasizes long-term scientific capability building, regulatory compliance, and service reliability.

Leadership succession at SMOC appears to prioritize internal continuity rather than radical strategic change. Publicly available information suggests that senior leadership roles are closely linked to long-term involvement in core research and management functions. This internal succession orientation supports strategic continuity by ensuring that incoming leaders possess in-depth understanding of ongoing projects and institutional priorities.

From a strategic perspective, leadership continuity at SMOC contributes to consistent resource allocation decisions, particularly in research infrastructure and talent development. Unlike externally appointed leaders who may introduce abrupt strategic redirection, internally developed successors are more likely to refine existing strategies incrementally (Zhang & Rajagopalan, 2010). This approach reduces coordination costs and maintains organizational focus.

Moreover, leadership succession practices at SMOC help stabilize internal expectations during transition periods. When leadership changes are perceived as predictable and aligned with existing strategy, employees are less likely to experience uncertainty or resistance, thereby supporting uninterrupted research operations and collaborative efficiency.

5. Discussion

The case of SMOC illustrates how leadership succession can function as a strategic stabilizer rather than a source of disruption. Succession planning supports strategic continuity by embedding long-term organizational values and objectives within future leadership. This finding aligns with organizational inertia theory, which argues that stability in key structures enhances organizational survival in complex environments (Hannan & Freeman, 1984).

Importantly, strategic continuity does not imply strategic stagnation. At SMOC, leadership succession appears to enable gradual strategic adaptation while preserving core scientific and organizational foundations. This balance between continuity and controlled change is particularly valuable in pharmaceutical enterprises facing regulatory and technological uncertainty.

6. Conclusion and Implications

This study examines the impact of leadership succession on strategic continuity through a case study of Shanghai Model Organisms Center, Inc. The findings indicate that structured and internally oriented succession planning contributes to maintaining strategic direction, stabilizing decision-making processes, and preserving critical knowledge assets.

For pharmaceutical enterprises, leadership succession should be treated as a strategic governance mechanism rather than a purely administrative task. Managers are encouraged to integrate succession planning

with long-term strategic objectives and talent development systems. Academically, this study contributes to succession planning literature by providing sector-specific insights into pharmaceutical research organizations in China.

Future research may incorporate primary data or comparative case studies to further validate and extend these findings.

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TOKENOMICS AND INVESTMENT DECISIONS IN THE DIGITAL ECONOMY: EMPIRICAL EVIDENCE FROM MACEDONIAN YOUTH INVESTORS

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Abstract

The expansion of blockchain technology has given rise to a range of new digital assets that are significantly changing the way people behave and invest today. Cryptocurrencies and non-fungible tokens (NFTs) have come to be considered the main elements of digital financial markets, with an ever-increasing involvement of young people. The economic framework of tokenomics that controls the creation, distribution, utility, and governance of tokens is among the key factors influencing how value is perceived and how investors behave today. The paper delves into the relationship between tokenomics and the youth investment decisions within digital ecosystems.

Through the analysis of blockchain features, token supply mechanisms, financial literacy level, influence of social media, and the use of inferential statistics, the research reveals the manner in which young investors in Macedonia understand and handle digital assets. Additionally, the paper investigates how technology and behavioral aspects influence their investment choices. Findings contribute to the area of digital economy and platform-based finance by pointing out that economic design, openness, and education are the main factors for the continued involvement of the young generation in the markets through the use of blockchains.

The token economy, through its influence on finance, changes the design of the digital ecosystem by channeling digital capital from young people. Young Macedonian investors are far from just speculative players. In fact, they are ecosystem participants who evaluate structural economic design.

Keywords: tokenomics, youth investment, blockchain, cryptocurrencies, NFTs.

1. Introduction

Today, due to the digital transformation of financial markets, how people interact with investment opportunities has changed drastically. Traditional financial systems, which had only a few centralized institutions and regulated intermediaries, are gradually being replaced by decentralized, technology-driven options. The main driver of this evolution has been artificial intelligence (AI) and blockchain technology. As Bilal Sucubaşı et al. (2025) have argued rapid development of GenAI is reshaping various sectors, with banking being one of the most significantly impacted. AI, and especially GenAI, is driving the emergence of new digital financial models that will easily replace the traditional ones. Additionally, blockchain enabled the creation of digital currencies, non-fungible tokens (NFTs), and decentralized finance platforms that no longer rely on traditional institutional boundaries.

One of the key characteristics that sets apart a blockchain asset is its tokenomics, which, in fact, refers to the economic structure implanted in a digital token that essentially describes the mechanisms by which value is generated, allocated, and maintained. Tokenomics is basically how things like supply, incentives, governance rights, and utility functions are handled and decided. It influences how investors think and act. Traditional assets, which get their price mostly from macroeconomic factors and trust in institutions, differ from crypto-assets that gain their value from algorithmic rules, network effects, and community participation. The emergence of token-based economic models not only alters investment behavior but also progressively deepens their impact on the digital ecosystem structure.

Youth is definitely one of the most active groups in the digital asset markets. Being knowledgeable about digital platforms, open to new things, and choosing flexible investment models have made them progressive users of blockchain adoption. Apart from viewing cryptocurrencies and NFTs as only profitable options, younger investors see them as a technology, freedom, and being part of the new digital world. Influencing entrepreneurial funding modes, decentralized governance, and crowdfunding alternatives, tokeneconomics transforms the digital ecosystem from traditional venture capital-based to community-funded and algorithmically governed systems. If the economic design, technological innovation, and financial literacy are in tune, the digital economy might be the source of market expansion and sustained economic development (Adner, 2017; Cong et al., 2021).

Despite the importance and the fact that markets have been expanding rapidly, there has been little attention paid to how tokenomics impacts the investment decisions of young people in the context of emerging economies. Most of the studies conducted so far have concentrated on the technology aspects or the changes in the market, thereby neglecting the behavioral and economic factors that influence investor participation in the financing of digital startups and the enhancement of the ecosystem's vitality. The purpose of this paper is to fill this gap by examining how tokenomics affects the investment behavior of Macedonian youth in the setting of digital ecosystems, focusing on the lack of financial literacy, the role of trust, risk perception, and social influence. More precisely, the focus in this paper is on the following research objectives:

- Defining Tokenomics and examining how its main principles (e.g., supply models, token types) influence youth decision-making in digital assets.
- Analyzing how blockchain features such as decentralization, transparency, and security foster trust among young investors.
- Evaluating the role of financial literacy in shaping youth attitudes and risk perception toward digital assets investments; and
- Identifying the impact of social media platforms and influencers on youth investment trends.

2. Tokenomics Key Principles and Economic Design

Tokenomics refers to the economic design of digital tokens typically built on blockchain infrastructures. It is system-defining the rules under which tokens are created, distributed, utilized, and destroyed, as well as the way tokens affect the behavior of users, market dynamics, and the sustainability of the project. The word "Tokenomics" which is a combination of "token" and "economics," represents the economic system and the incentive structure that support the blockchain-based tokens, which are units of value given and controlled in decentralized networks. With the growth of digital assets such as cryptocurrencies, utility tokens, and non-fungible tokens (NFTs) tokenomics has become a key concept in the field of blockchain economics.

The origin of tokenomics goes back to the beginning of Bitcoin in 2009 by Satoshi Nakamoto, whose white paper described a limited-supply currency governed by a consensus mechanism and distributed incentives (Nakamoto, 2008). Bitcoin's economic model has essentially revealed a few fundamental concepts to the world: limited availability (achieved through a fixed supply of 21 million coins), incentive-driven consensus (via mining rewards), and an incentive-based consensus mechanism (through Proof of Work). These initial methods were basically the very first tokenomics setup, aimed at encouraging trustless collaboration among the network participants. With the release of Ethereum in 2015 (Buterin, 2014), the range of tokenomics drastically widened. It brought in the concept of programmable smart contracts and made it possible to create custom tokens following standards like ERC-20 and ERC-721. Such adaptability resulted in a wave of decentralized applications (dApps), Initial Coin Offerings (ICOs), and token-based ecosystems that required new approaches to economic design.

The period 2017-2018, commonly known as the ICO boom, showcased the importance of token design. Poorly structured models fueled speculation and led to project failures, while well-designed models provided the foundation for sustainable digital economies. The rise of tokenomics as a formal research area was filled with the connecting of ideas of game theory, behavioral economics, cryptography, and systems design (Chohan, 2017).

In essence, tokenomics is the analysis of the way in which the tokens that are based on blockchain technology operate in their respective ecosystems. Thus, it is concerned with the aspects of the tokens, such as their issuance, allocation, governance, and circulation. It also covers the technical side (such as the total supply, issuance rate, and deflationary mechanisms) as well as the economic design issues (such as providing incentives to users, staking rewards, the right to participate in governance, and burn strategies). As shown in Figure 1, tokenomics is the vital link for the creation of a harmonious relationship between the stakeholders - the startups, developers, the investors, the validators, and the users by means of the transparent and algorithmic rules that are embedded in the smart contracts.

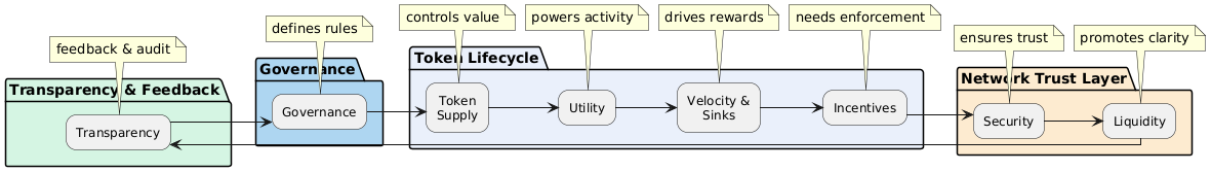

Figure 1: Tokenomics Architecture and Component Interactions
Source: Author's illustration.

Tokenomics principles represent a multidisciplinary framework integrating parts of economics, cryptography, game theory and behavioural psychology. Properly designed and responsibly executed tokenomics models have the potential to establish self-sustaining digital ecosystems with active user participation, governance incentives, and sustainable economic structures (Cong et al., 2021; Hassan & Kyriakou, 2021). The combination of AI and big data significantly enhances the ability of blockchain-based platforms to create adaptive tokenomic models, increase investor engagement, and support sustainable development (Brynjolfsson & McAfee, 2014; Davenport & Ronanki, 2018). Failure to follow these principles may result in runaway inflation, users losing trust, and ultimately the project failing. With blockchain technology spreading worldwide, including developing markets like North Macedonia, it is increasingly necessary for developers, investors, and policymakers to understand and apply these principles.

3. Youth Investment Behavior in Digital Markets

The investment behaviour of young people, usually defined as those up to thirty years old, has changed enormously over a shorter period. This change was influenced by the intensive usage of digital technologies, changes in socio-economic priorities, and the rise of new financial instruments such as cryptocurrencies and NFTs. Investors of a new generation behave quite differently from the older generations. To illustrate, the older generation generally had a cautious, low-risk investment strategy and was long-term oriented, as evidenced by their preference for savings accounts, bonds, and real estate as the main investment vehicles. On the

contrary, younger investors are believed to be more innovative, more risk-taking, and more inclined to digital and decentralized assets. (Lusardi & Mitchell, 2014).

A variety of factors influence the youth investment behaviour. Firstly, technology skills play a great argumentative part in this. Being a digital native, youth nowadays are much friendlier to financial apps, crypto exchanges, peer-to-peer platforms, and blockchain-based marketplaces as compared to the older generation. The investment has also become very easy nowadays. Even people with a small amount of money can take part, as the entry barriers are kept low. (Boisclair et al., 2017).

Second, social media and peer networks are not only key sources of investment education but also massively impact investors' decisions. Through platforms like Twitter, Reddit (for example, r/WallStreetBets), and TikTok, ideas, popular stocks, and new tokens spread quickly, thereby influencing people's financial decisions faster than ever.

Recent studies indicate that social media platforms increasingly shape the investment behavior of younger generations, who often rely on online communities, influencers, and algorithm-driven content when evaluating investment opportunities (Chen et al., 2021; Godefroid & Sigloch, 2022).

The main focus of the youth in the blockchain space is cryptocurrencies, NFTs, and decentralized finance (DeFi). Besides being innovative, these assets are strongly associated with financial independence, anti-establishment towards the establishment, and digital identity (Schar et al., 2021). NFTs continue to gain popularity as more people use them for their real value rather than speculation, such as a medium of cultural expression, objects for gaming fun, and a symbol of community standing. In the same way, governance tokens in DeFi protocols are very much like voting rights, as they give holders the power to decide on the future of the project. Such a participatory role is particularly appealing to followers of the younger generation who highly value openness and engagement.

The trends mentioned above can also be seen among Macedonian young people who are quite active with the use of digital technologies. However, one of the main causes that prevents the younger generation in Macedonia from deeper involvement with blockchain technology includes the low level of financial literacy on a national basis and the unavailability of regulated cryptocurrency markets. Nevertheless, most of the enthusiastic youth who want to invest in the Macedonian society are experimenting with crypto-assets and are, in most cases, motivated to remove the local economic barriers and to get access to the global financial market. According to surveys and informal reports, young people in the area are especially attracted to platforms that are easy to reach through a mobile phone, have low-cost transactions, and offer educational materials in the local language. These factors determine not only the investment choices of young people but also the levels of risk and trust they attribute to different platforms that they find.

Youth investment attitudes are still very much affected by some psychological elements like overconfidence, loss aversion, and herd behavior. A study in behavioral economics reveals that youth investors are impulsive in their investment, emotionally affected by market changes, and tend to follow a trend without getting the asset mechanisms at a deeper level (Kumar & Goyal, 2015). Notably, such a nature of the investors is made more obvious in the scope of the fast-evolving and unregulated markets, for instance, those of cryptocurrencies.

However, young investors are very diverse, and their investing strategies vary as well. Some of them want to make quick money through speculating and taking advantage of short-term opportunities. Others are more focused on the technology sector in the long run, they advocate for socially responsible investing and seek portfolio diversification. There are some inclined towards dollar-cost averaging or simply buying and holding (usually referred to as HODLing), whereas some others actively trade based on technical charts or even the influencer's opinions.

4. Empirical Analysis of Youth Investment Decisions in Digital Assets

Even though digital assets are rapidly growing, there is still a gap in the literature about how tokenomics affect the behavior of youths and their decision to invest in digital entrepreneurial ecosystems. Cryptocurrencies and NFTs have been central topics of research globally, however, only a few scholarly papers explore the impact of the tokenomic structures on the financial attitudes of young investors (Autio et al., 2018; OECD, 2020). This is particularly important because young investors usually show reasons, risk perceptions, and ways of investing that are very different from elder market players who have traditionally been dominant.

Unlike traditional investors, young people who are into digital markets do not only consider profit expectations as their main focus. Some see cryptocurrencies and NFTs as tools for quick money-making. Other individuals see them as long-term investment assets, a type of digital identity, or even a form of self-expression in decentralised communities (Nakamoto, 2008). Here, tokenomics is not merely a feature of technical design but also an economic architecture that establishes trust, generates incentives, and enables participation.

4.1. Research Methodology and Survey Design

Aiming to understand how blockchain features like decentralization, transparency, and immutability can help build investor trust, the study focused on the effect of these features on young investors (especially young adults) who are prone towards independence and innovation. The research employs a mixed-methods design that integrates both descriptive and inferential statistical methods. A structured questionnaire was built to gather information about the factors that motivate young people, their knowledge of finance, how they perceive risks, and the kind of investments they make in blockchain-based assets. Given that the academic research on this topic in North Macedonia is still in its infancy, the method used creates an opportunity to understand major trends in the evolution of the digital economy.

Descriptive statistics and Analysis of Variance (ANOVA) tests were performed using SPSS to examine differences in mean responses for different groups, such as age, gender, income and education level, i.e., the level of understanding tokenomics. A non-probability sampling method was used, i.e., convenience sampling, to reach out to those individuals who are highly likely to be familiar with digital assets and have been investing as well.

The research questionnaire primarily comprised closed-ended and Likert scale questions, appropriate for quantitative analysis. A few open-ended questions were also included to collect deeper insights and personal viewpoints. The online survey was available on Google Forms and carried out within a timeframe of three months to gather enough responses for a reliable statistical analysis.

4.2 **Demographic data of empirical research**

The survey analyzed results have been divided into the main themes of the research: demographic characteristics, financial literacy, investment behavior, risk perceptions, and the influence of social factors. The findings give useful insights into what motivates young people, their knowledge gaps, and the investment patterns of young people in digital assets. The research also helps to clarify the overall position of tokenomics in the development of financial ecosystems.

Table 1 demonstrates the demographic breakdown that was used for this study. The data is derived from the responses of 116 people with varying levels of investment experience. Most of the participants (62.1%) were female. The largest group of respondents (80.2%) are between 13-28 years old, thus the survey is primarily a reflection of youth perspectives. When it comes to occupation, nearly half (47.4%) of the respondents say they are working full time and therefore for them most likely have a steady and regular income.

Table 1

Demographic data of the respondents

Features		Total	Percentage
Gender	Female	72	62.1%
	Male	44	37.9%
Age	13-28	93	80.2%
	29-44	19	16.4%
	45-60	4	3.4%
	61-	0	0%
Occupation	Student	41	35.3%
	Employed full time	55	47.4%
	Employed part time	12	10.3%
	Self Employed	6	5.2%
	Freelancer	2	1.7%
Monthly income	Up to 12.000 MKD	30	26.8%
	12.001-45.000 MKD	39	34.8%
	45.001-70.000 MKD	22	19.6%
	Over 70.000 MKD	21	18.8%
Education level	High School	19	16.4%
	Bachelor's degree	51	44%
	Master's degree	38	32.8%
	PhD	7	6%
	PhD Candidate	1	0.8%

Source: Author's illustration

About a third of the sample are students, which corresponds with the fact that the sample is mostly young. 112 out of 116 respondents answered about their estimated monthly income. The biggest group is the one that earns between 12.001 and 45.000 MKD, indicating a modest yet relatively stable financial position of students and young professionals in North Macedonia.

The education data indicates a highly educated sample. The majority of respondents have completed higher education. The Bachelor's degree graduates represent the most significant fraction (44%), while the percentage of Master's degree holders is 32.8%. The composition of the sample in general points to a youthful, well-educated group with moderate income levels and actively involved in education or employment.

4.3 Linking Tokenomics and Risk Perception to Investment Decisions

Tokens represent the main digital assets, and investing in them is a key idea in tokenomics. Yet, according to the results of this survey, the level of engagement of the population of Macedonia with digital tokens is quite low. Specifically, more than half of the respondents (52.6%) declared that they have never invested in any kind of digital asset, 36.2% said they have invested in cryptocurrencies such as Bitcoin or Ethereum, 15.5% mentioned other types of digital assets, and only 6.9% admitted to having invested in non-fungible tokens (NFTs). Moreover, 56.9% of people interviewed indicated they were "Not familiar" with the word tokenomics, and 51.7% of the respondents consider their financial literacy at the moderate level. More

than half of the respondents are non-participants in digital investing and also have moderate financial literacy, thus, this situation opens a huge opportunity for financial education and awareness, especially about the risks, advantages, and workings of tokenomics.

Concerning the risk appetite, the results indicate that although risk-takers account for the majority (48.3%), a considerable number of people see themselves in the middle (26.7%) and as cautious investors (25%), thus maintaining their investment behaviour stable and more cautious, respectively.

To further investigate the relationship between tokenomics understanding and investment behavior, a Spearman's correlation analysis was conducted to test the alternative hypotheses H_1: Greater understanding of tokenomics is positively associated with more active investment decisions in cryptocurrencies/NFTs. For this purpose, categorical survey responses were recoded into numeric values to allow statistical testing.

Table 2

Spearman's Correlation Between tokenomics, monthly investment, trend influence, and investment duration

Variable	Better Understanding of Tokenomics	Monthly Investment	Trend Influence	Investment Duration
Better Understanding of Tokenomics (Correlation)	1.000	-.205*	.303**	-.320**
Sig. (2-tailed)	.	.027	<.001	<.001
N	116	116	116	116
Monthly Investment (Correlation)	-.205*	1.000	-.428**	.690**
Sig. (2-tailed)	.027	.	<.001	<.001
N	116	116	116	116
Trend Influence (Correlation)	.303**	-.428**	1.000	-.386**
Sig. (2-tailed)	<.001	<.001	.	<.001
N	116	116	116	116
Investment Duration (Correlation)	-.320**	.690**	-.386**	1.000
Sig. (2-tailed)	<.001	<.001	<.001	.
N	116	116	116	116

Source: Author's Illustration

Understanding tokenomics was positively correlated with being influenced by trends ($\rho = 0.303$, $p < .001$). This means that beside people knowing more about tokenomics, they can still be influenced by the trend of the market when they make decisions to invest. However, a negative correlation was detected between tokenomics comprehension and the amount invested per month ($\rho = -0.205$, $p = .027$), as well as the length of investment ($\rho = -0.320$, $p < .001$). These indicate that those who have a high level of understanding of tokenomics are more likely to invest smaller amounts and for shorter durations of time, thus, they may be considered as more cautious or calculated in their approach.

Monthly investment amount has a negative correlation with trend influence ($\rho = -0.428$, $p < .001$), indicating that investors of bigger amounts are less influenced by temporary market hype. Furthermore, a strong positive correlation was found with the duration of the investment ($\rho = 0.690$, $p < .001$). Hence, those who put more money into investments are also the ones who generally hold them longer, thus their positions are more of an emotional attachment.

Trend Influence, apart from the relationship with tokenomics, trend influence negatively correlated with investment duration ($\rho = -0.386$, $p < .001$). To put it differently, the trend followers are the ones who would

most likely quit fast rather than keep their investments for a long time.

4.4 The Role of Blockchain Features in Shaping Perceived Value

Many respondents highlighted that they prefer digital platforms that are simple to use and that inspire confidence in their reliability. Moreover, some respondents mentioned that thorough research and gaining a deeper insight into how digital assets operate, technically speaking, assisted them in making more rational decisions. What is even more surprising is that it is the same group of respondents who confessed that they had little knowledge of the technology, and yet they considered blockchain as a phenomenal technological innovation and a field that is full of opportunities.

Table 3 presents a summary of the descriptive statistics of how different blockchain characteristics, such as transparency, security, and decentralization, impact the degree of trust that respondents have in digital assets:

Table 3

Descriptive Statistics for Blockchain Features Influencing Trust in Digital Assets (N=116)

	Minimum	Maximum	Mean	Std. Deviation
Transperancy	1	5	2.83	1.189
Security	1	5	2.83	1.218
Decentralization	1	5	2.99	1.183
Valid N (listwise)				

Source: Author's Illustration

The average values indicate that Decentralization was rated as the most important factor (M = 2.99, SD = 1.18), with Transparency (M = 2.83, SD = 1.19) and Security (M = 2.83, SD = 1.22) coming a close second and third, respectively. According to the relative importance percentages, decentralization stands for around 60% importance, while both transparency and security make up 57% each in the five-point scale. These findings indicate that all three features of the blockchain are widely considered as a trust basis for digital assets to some extent. However, the respondents gave a little more weight to decentralization as the main factor that builds trust.

With a view to the investment motivations in digital assets, Table 4 below provides an overview of the descriptive statistics of each statement, along with the mean and standard deviation.

Table 4

Distribution of Responses to Investment Motivation Statements (N=116)

	Minimum	Maximum	Mean	Std. Deviation
short_term_gains	1	5	2.50	1.261
long_term_stability	1	5	2.85	1.359
excitement_of_investing	1	5	2.72	1.324
believe_in_technology	1	5	3.02	1.338
low_transaction_costs	1	5	2.45	1.160
FOMO	1	5	2.36	1.261
differentiate_from_traditional	1	5	2.63	1.329
Valid N (listwise)				

Source: Author's Illustration

The mean scores indicate the average agreement level for each factor. The highest agreement was found in the response to the statement *"I invest because I believe in technology and its future potential*" (M = 3.02, SD = 1.34), which reflects that technology-related beliefs are, in fact, relatively more influential. On the other hand, the lowest agreement was recorded for *"I invest because of FOMO"* (M = 2.36, SD = 1.26) and *"I invest because of low transaction costs*" (M = 2.45, SD = 1.16), which means that these types of motivations have a lesser role in the respondents' decision-making. In general, the figures reveal that young Macedonian investors are to some extent driven by the prospect of long-term stability and the thrill of investing, whereas short-term profits got the lowest score.

Survey participants are also asked how often they have consulted human or AI financial advisors before making investment decisions in digital currencies or NFTs. Comparison of human financial advisors and AI

financial assistants (e.g., ChatGPT, Copilot, or Gemini) yielded the following results:

a) About 40% of respondents said that they never consult traditional financial advisors before investing in crypto/NFTs. An almost identical number of people (40%) said they sometimes consult these advisors. Only around 20% of the respondents stated that they always seek advice from traditional advisors. This indicates that investors are moving away from seeking advice from traditional financial advisors when investing in digital assets. On the other hand, it can also indicate that traditional advisors are not very knowledgeable or quick to change in the fast crypto space (Allen et al., 2022). It may reflect the tendency of the young to educate themselves or learn from their peers on various online platforms.

b) 35-40% of respondents stated that they regularly consult AI financial tools, another sizable group of respondents (around 40%) answered sometimes, and fewer respondents (30-35%) chose never, which shows that AI tools are generally accepted and increasingly used. These results suggest that there is an increasing trust in AI-powered financial tools, particularly among digitally native investors. Features identified as being very attractive by this survey consist of statements of many scholars emphasizing that AI advisors are available 24/7, bring in data-based insights, and are very economical. In addition, it can be inferred that platforms such as ChatGPT are gradually getting integrated into the decision-making process, particularly for those users who might be unable to get human advisors.

It is clearly evident that there has been a change in generations and technology, which has affected how people receive investment advice. The study reveals that there is a decreasing trend of investors, mainly the younger generation, using the services of traditional financial advisors. Traditional advisors are still necessary to a few, but are now only sometimes or rarely used by the majority of the respondents. On the contrary, AI-powered advisory tools are becoming more obvious, and this trend suggests a step towards digital-first, self-directed financial behavior. This also highlights the importance of enhancing the reliability, openness, and educational benefits of AI instruments to the extent that they are considered part of the youth's financial choices in the crypto and blockchain sectors.

The results indicate that tokenomics should be regarded more as a flexible rather than a fixed economic model, and its success depends on continuous feedback, adaptable governance structures, and participation of well-informed users. AI and big data power this mechanism by allowing the platforms to respond quickly to changes and operate efficiently.

4.5 Social Media and Platform Influence

Social media and digital platforms are the major driving forces behind investment stories today. Influencers and content created by algorithms decide what is regarded as an opportunity and a risk. The value of an asset in cryptocurrency and NFT is often largely dependent on its exposure and the level of community interaction. Because information spreads quickly through digital channels, market reactions become more rapid, resulting in volatility and speculative cycles. These platforms, from one aspect, enhance accessibility and participation, and from another, they dislodge the use of traditional financial evaluation methods as they focus on sentiment rather than the fundamentals.

Building on such implications, survey responses data are analyzed by using a one way ANOVA analysis to test the alternative hypothesis H_1: Social media and online influencers significantly impact the youth investment volume in crypto and NFT markets.

Table 5

ANOVA analysis of social media influence on youth investment

		Sum of Squares	df	Mean Square	F	Sig.
Social media influence for Cryptocurrencies	Between Groups	35.219	4	8.805	5.694	<.001
	Within Groups	171.643	111	1.546		
	Total	206.862	115			
Social media influence for NFT	Between Groups	19.177	4	4.794	3.989	.005
	Within Groups	133.401	111	1.202		
	Total	152.578	115			

Source: Author's Illustration

Table 6

ANOVA Effect Size analysis for social media influence on cryptocurrency and NFT investments.

ANOVA Effect Sizes[a,b]

			95% Confidence Interval	
		Point Estimate	Lower	Upper
Social media influence for Cryptocurrencies	Eta-squared	.170	.041	.270
	Epsilon-squared	.140	.007	.244
	Omega-squared Fixed-effect	.139	.007	.242
	Omega-squared Random-effect	.039	.002	.074
Social media influence for NFT	Eta-squared	.126	.015	.219
	Epsilon-squared	.094	-.021	.191
	Omega-squared Fixed-effect	.093	-.021	.190
	Omega-squared Random-effect	.025	-.005	.055

a. Eta-squared and Epsilon-squared are estimated based on the fixed-effect model.

b. Negative but less biased estimates are retained, not rounded to zero.

Source: Author's Illustration

The results of the ANOVA reveal strong evidence that social media and online influencers impact and shape the investment behavior of young individuals. The test for cryptocurrencies showed a statistically significant effect ($F(4, 111) = 5.694$, $p < .001$), implying that responders across different categories (gender, age groups, education, or income level) differ considerably in how they perceive social media's role in cryptocurrency investment decisions. The effect size ($\eta^2 = .170$) marks the impact as moderate, thus, there is a significant role of the content of online platforms and influencers in guiding the decisions that are related to cryptocurrencies.

Similarly, the case of NFTs also brings in significant results ($F(4, 111) = 3.989$, $p = .005$), however, the effect was somewhat smaller ($\eta^2 = .126$). The result indicates that social media continues to be a key factor influencing NFT investments, although its influence is not as strong as in the cryptocurrency area.

In practical terms, the overall results imply that young investors have a very strong reaction to stories, advice, and the hype circulating in such communities online. Although the extent of such influence is not equal across different demographic categories and for different kinds of assets, the overall findings most convincingly reveal that digital sources have a great impact on the financial and investment choices of the Macedonian youth. This is a signal for policymakers and educators that the need for greater financial literacy programs and awareness campaigns that can help young investors significantly evaluate online information before making investment decisions.

5. Implications for Investors, Educators, and Policymakers

The research results deliver a very strong message to digital economies, policymakers and educators. Youth and entrepreneurial developers starting blockchain-based platforms and tokens should pay more attention to sustainable tokenomics while coming up with their products. (Autio et al., 2018). As tokenomics become a key element in understanding and evaluating digital assets, the parties will have to alter their behavior and functions to remain competitive (OECD, 2020).

One very obvious point that *leaders in policy and educators* must understand is the necessity, to enhance financial education with digital content and to grasp tokenomics more deeply. Educational institutions must come up with digital literacy programs, and the idea of tokenomics should be implanted in business courses. Policymakers and educators are undoubtedly key factors in making positive development possible. In such a scenario, a proper regulatory framework mainly serves to mitigate uncertainty and set a safer ground for innovation and investments. (Arner, Barberis, & Buckley, 2017).

Research shows that a significant number of young investors are highly involved in the crypto market. However, the majority of them are still quite unfamiliar with the core features. Lack of such knowledge makes investment decisions mostly based on excitement rather than the value of the investment. Therefore, investors tend to be more exposed to losses (Nakamoto, 2008).

Young investors need to learn that it is not sufficient to determine the value of tokens only by looking at their past prices or popularity on social media. One should consider their economic design as well, which basically means that the layout, issues the token addresses, and the manner in which the ecosystem engages in value creation and continuation should be taken into account (Autio et al., 2018).

For *digitally native entrepreneurs and project initiators*, these are the ones who should be pretty much

clear from these findings that the responsible design of tokenomics matters greatly. Since the crowd of young, inexperienced investors is growing in the market, the responsibility of developers to make clear, properly functioning, and eco-friendly token models is getting quite obvious (Autio et al., 2018). Tokenomics should go beyond simply being the main method for short-term hype cycles. In fact, tokens need to be created with actual use cases, clear governance rules, and inflationary or deflationary mechanisms that help (Nakamoto, 2008).

The importance of overcoming the educational gap cannot be overlooked either. A lot of people still do not fully understand tokenomics. Hence, it is very important for projects to have clear documentation, provide users with interactive onboarding experiences and support community-based learning initiatives. Trust will also be established if there is open-source code, the smart contracts can be verified and the white papers are both transparent and easy to understand (Nakamoto, 2008).

To sum up, young investors have to see clearly the shared responsibility that lies on their shoulders in the market of digital investments that are real and sustainable. The research was conducted in North Macedonia, where blockchain adoption is still quite limited, so the innovative developers have a great chance to set the standard for the whole region (OECD, 2020). On the one hand, investors have to keep themselves open to the incoming of new knowledge all the time and on the other, developers need to be extremely honest and led by the rules of ethics.

6. Conclusion

This study examined the impact of tokenomics on youth investment decisions, with particular attention to the role of blockchain technology, token supply models, financial literacy, and social influence. The findings indicate that blockchain adoption among young investors in North Macedonia is steadily increasing, reflecting a growing interest in cryptocurrencies and NFTs as alternative investment opportunities.

The results show that decentralization is the most valued feature of blockchain technology among young investors, while transparency and security also contribute positively to trust in digital assets. Although awareness of tokenomics concepts remains relatively limited, participants who demonstrated greater knowledge of token supply mechanisms and token utility were generally more confident in their investment decisions.

The study further confirms that social media platforms and online influencers play an important role in shaping youth investment behavior. Many respondents reported relying on digital content and online communities when evaluating investment opportunities. At the same time, financial literacy emerged as an important factor affecting risk perception and investment confidence.

The research highlights that young investors differ from traditional investors in their openness to technological innovation, willingness to explore digital assets, and reliance on online sources of information. Despite growing interest in blockchain-based investments, many young investors continue to invest relatively modest amounts, reflecting both caution and the evolving nature of the digital asset market.

Overall, the findings demonstrate that tokenomics, blockchain characteristics, financial literacy, and social influence collectively shape youth investment decisions. These findings are consistent with recent research emphasizing the growing influence of digital communities, token governance structures, and online information channels on investment behavior in blockchain-based ecosystems (Chen et al., 2021; Cong et al., 2021). As digital assets continue to evolve, improving financial education and awareness of tokenomics principles may help young investors make more informed investment choices while supporting the sustainable development of the digital investment ecosystem.

7. Further Research and Implications

This research provided valuable insights into youth involvement in tokenomics and digital asset investments. Furthermore, it contributes to the growing body of academic research on blockchain technology, cryptocurrencies, NFTs, and investment behavior among young investors. The findings support continued research into the role of tokenomics in shaping investment decisions and influencing participation in digital financial markets.

An important direction for future research would be to examine the impact of tokenomics on actual investment performance over a longer period. While this study primarily focused on investor perceptions and behavior, future studies could analyze different token models, such as fixed supply, inflationary, or governance-based tokens, and evaluate their performance over time. Such research could provide investors and researchers with a deeper understanding of how token design influences investment outcomes.

Another interesting area for future investigation is the influence of regional and cultural factors on blockchain adoption and digital asset investment. This study was conducted in North Macedonia, where interest in digital finance is increasing despite existing regulatory and infrastructural challenges. Comparative studies involving other Balkan countries or more developed markets could help identify how economic conditions, educational backgrounds, regulatory frameworks, and digital infrastructure influence attitudes toward cryptocurrencies and NFTs.

As blockchain technology and digital assets continue to evolve, ongoing research remains essential. Future studies should adopt interdisciplinary and cross-cultural approaches to better understand the relationship between tokenomics, blockchain adoption, financial literacy, and investment behavior. Such research could contribute to the development of educational initiatives, informed policymaking, and a more transparent and sustainable digital investment environment.

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PERFORMANCE MANAGEMENT OPTIMIZATION AND INNOVATION IN THE DIGITAL ECONOMY: A CASE STUDY OF SHANGHAI GOLDEN CO., LTD

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Abstract

Performance evaluation is a key component of human resource management, influencing employee productivity, organizational efficiency, and strategic development. In the digital economy, enterprises must integrate digital technologies into management systems to remain competitive, especially in the education and training industry, where service quality and customer engagement depend heavily on human capital. Shanghai Golden Co., Ltd (GOLDEN), a leading professional training institution in China, has expanded rapidly and adopted digital tools, yet its performance evaluation system still shows limitations, including an overemphasis on short-term enrollment indicators and insufficient attention to innovation and qualitative performance. This study examines the existing performance management practices of GOLDEN and identifies key challenges in the digital economy context. It further proposes optimization strategies that emphasize digital integration, innovation-oriented evaluation, and long-term value creation. The findings provide practical insights for improving performance management systems in education and training institutions and support their sustainable development.

Keywords: digital economy; performance optimization; innovation; human resource management; education industry.

1. Introduction

The expansion of the digital economy has not only reshaped business models but also redefined how organizations evaluate performance (Radicic & Petković, 2023). In traditional settings, performance assessment was largely based on clearly observable outputs, such as sales figures or task completion (Qiu et al., 2025). While such measures remain relevant, they are no longer sufficient in environments where value creation increasingly depends on knowledge, interaction, and innovation(Zhou et al., 2024).

The education and training sector offers a particularly relevant context for examining this shift. With the rise of online platforms and hybrid learning models, institutions are required to deliver services that combine technical efficiency with personalized experiences. As a result, employee performance can no longer be fully captured through a single set of quantitative indicators.

Shanghai Golden Co., Ltd (GOLDEN) provides an illustrative example. As a fast-growing training provider with a broad portfolio of programs, the company has actively embraced digital tools in its operations. Yet its performance evaluation practices have evolved more slowly. This gap between operational transformation and managerial adaptation creates tensions that are worth examining in detail.

2. Current Performance Evaluation System

At present, GOLDEN employs a performance evaluation system that is largely structured around functional roles. Course consultants are primarily assessed through enrollment-related metrics, while teaching staff are evaluated based on student feedback and course outcomes. Administrative personnel, in turn, are judged according to operational efficiency and internal support performance.

This structure reflects a rational attempt to match evaluation criteria with job responsibilities (Boakye et al., 2025). However, the practical implementation reveals a clear imbalance. Quantitative indicators—particularly those tied to enrollment—tend to dominate decision-making processes because they are directly linked to revenue generation and easier to measure (Deng et al., 2025).

Moreover, although the organization has introduced digital tools to support its operations, these tools are not fully integrated into the evaluation system. Performance data is often dispersed across different platforms, limiting its usefulness for comprehensive analysis. As a result, the evaluation process remains partially dependent on manual interpretation, which reduces both consistency and transparency.

3. Problems in Performance Evaluation

The most immediate issue within the current system is its strong orientation toward short-term outcomes. By placing significant weight on monthly enrollment targets, the organization implicitly encourages employees to prioritize immediate results. While this may support short-term growth, it risks undermining long-term service quality. In some cases, the pressure to meet targets may lead to decisions that do not fully align with students' needs, thereby affecting overall satisfaction(Kong et al., 2022).

A second concern relates to the distribution of evaluation standards across different roles. Employees whose work produces easily quantifiable results tend to receive more recognition, whereas those engaged in teaching or support functions face greater difficulty demonstrating their contributions. Over time, this imbalance may influence how employees perceive fairness within the organization, potentially affecting motivation and collaboration.

Finally, the system does not sufficiently account for innovation. In a sector where continuous improvement is essential, the absence of clear incentives for innovation represents a significant limitation. Employees who invest effort in developing new teaching approaches or improving service processes may find that these contributions are not adequately reflected in their performance evaluations.

4. Performance Optimization and Innovation Strategies

Addressing these issues requires more than incremental adjustments; it calls for a rethinking of the evaluation framework. One important step is the development of an integrated digital performance system(Leavitt et al., 2025). By bringing together data from learning platforms, customer interactions, and internal operations, the organization can create a more comprehensive basis for evaluation. This would allow managers to move beyond isolated indicators and consider performance in a more holistic manner.

Equally important is the inclusion of innovation as a formal evaluation dimension. Rather than treating innovation as an optional activity, the organization should recognize it as a core component of performance. This can be achieved by introducing indicators related to course development, digital engagement, and service improvement. Such changes would signal that creativity and initiative are valued alongside measurable outcomes.

In addition, the balance between short-term and long-term indicators needs to be reconsidered. While enrollment figures remain relevant, they should be complemented by measures such as student retention and satisfaction. These indicators provide a more accurate reflection of service quality and are better aligned with the organization's long-term objectives.

Finally, the evaluation process itself can be improved by incorporating multiple perspectives. Feedback from students, colleagues, and supervisors can offer a more nuanced understanding of employee performance, reducing the limitations associated with single-source assessments.

5. Conclusion

The case of GOLDEN highlights a broader challenge faced by many organizations operating in the digital economy. While technological adoption can improve efficiency, it does not automatically lead to more effective management practices. Performance evaluation systems, in particular, require deliberate redesign in order to reflect new forms of value creation.

By integrating digital tools, recognizing innovation, and balancing different types of performance indicators, organizations can develop more adaptive and effective evaluation systems. Such systems not only provide a more accurate assessment of employee contributions but also help guide behavior in ways that support long-term development.

In this sense, performance optimization is not merely a technical issue but a strategic one. It involves aligning evaluation practices with the broader transformation of the organization, ensuring that both individuals and the institution as a whole can thrive in an increasingly dynamic environment.

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THE INFLUENCE OF SHORT-VIDEO MARKETING ON TOURISTS' PURCHASE INTENTION: A CASE STUDY OF TRIP.COM GROUP

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Abstract

Social media interaction is an important way for tourism platforms to build consumer trust. Since consumers cannot experience travel services before payment, they often depend on online information, user reviews, and platform responses. Taking Trip.com Group as a case, this paper explores how timely replies, useful communication, user-generated content, service transparency, and emotional connection can improve consumer trust. The study suggests that Trip.com Group should strengthen real-time response, encourage authentic user interaction, and use social media as a long-term trust-building channel.

Keywords: social media interaction; consumer trust; tourism platform; Trip.com Group; online tourism; consumer engagement.

1. Introduction

In the online tourism industry, trust is one of the most important factors affecting consumer behavior. Unlike physical products, tourism services are intangible and uncertain before consumption. Consumers usually need to pay for flights, hotels, tickets, or travel packages before they actually experience the service. Because of this, they often worry about false information, service quality, refund rules, hidden costs, and booking risks.Trip.com Group is a representative online tourism platform that provides hotel booking, transportation ticketing, vacation products, and other travel services. In a competitive digital tourism market, the platform needs to win consumer trust not only through products and prices, but also through communication. Social media provides a direct space for Trip.com Group to communicate with users, answer questions, respond to complaints, share travel information, and show real travel experiences. This paper focuses on the question: How does social media interaction enhance consumer trust in tourism platforms? By taking Trip.com Group as a case, this study explains the relationship between social media interaction and consumer trust from a DBA management perspective.

2. Literature Review

2.1 Social Media Interaction

Social media interaction refers to two-way communication between enterprises and consumers through social media platforms. It includes comments, replies, likes, shares, direct messages, online campaigns, customer feedback, and user-generated content. Kaplan and Haenlein (2010) argued that social media changes the traditional relationship between companies and consumers because consumers can create, exchange, and respond to content. In tourism, social media interaction is especially important because tourists often search for others' experiences before making decisions. Xiang and Gretzel (2010) found that social media plays an important role in online travel information search. This means that tourists do not only depend on official platform information; they also pay attention to comments, reviews, photos, videos, and discussions from other users.

2.2 Consumer Trust in Tourism Platforms

Consumer trust refers to consumers' belief that a platform is reliable, honest, capable, and willing to protect their interests. Morgan and Hunt (1994) emphasized that trust is a key element in relationship marketing. In online transactions, trust becomes even more important because consumers face information asymmetry and perceived risk. For tourism platforms, trust includes several aspects. Consumers need to trust that the platform provides accurate information, protects payment security, offers reliable services, handles problems fairly, and responds to questions quickly. Gefen, Karahanna, and Straub (2003) argued that trust can reduce uncertainty in online environments and improve consumers' willingness to engage in transactions.

2.3 Social Media Interaction and Trust Building

Social media interaction can improve trust because it makes the platform more visible, responsive, and human. When consumers see that a tourism platform replies to questions, handles complaints, shares useful information, and encourages real user reviews, they are more likely to believe that the platform is responsible. Hajli (2014) found that social media interaction and social support can influence consumer trust

and purchase intention. In tourism, this effect is clear because consumers often need emotional reassurance and practical guidance before booking. Therefore, interaction is not just a marketing activity; it is also a trust-building process.

3. Theoretical Framework

This paper mainly uses three theories. First, Trust Theory explains that trust is built through reliability, honesty, competence, and care. In online tourism, consumers trust a platform when they believe it can provide accurate information and solve problems responsibly. Second, Consumer Engagement Theory suggests that consumers are more likely to build relationships with brands when they participate cognitively, emotionally, and behaviorally (Brodie et al., 2013; Hollebeek et al., 2014). Social media interaction can turn consumers from passive readers into active participants. Third, Social Media Marketing Theory emphasizes two-way communication. Compared with traditional advertising, social media allows consumers to ask questions, express feelings, share experiences, and receive direct responses from the platform.

The relationship can be expressed in a simple formula:

$$CT=\alpha+\beta1RR+\beta2IQ+\beta3UGC+\beta4ST+\beta5EC+\varepsilon$$

Where:

CT = Consumer Trust

RR = Response Reliability

IQ = Interaction Quality

UG = User-Generated Content

ST = Service Transparency

EC = Emotional Connection

α= Constant term

β= Influence coefficient

ε= Error term

This formula shows that consumer trust can be influenced by different dimensions of social media interaction.

4. How Social Media Interaction Enhances Consumer Trust

4.1 Timely Response Reduces Uncertainty

Timely response is one of the most direct ways to build trust. In online tourism, consumers often have many questions before booking. They may ask about hotel facilities, airport transfer, ticket rules, cancellation policy, or travel safety. If the platform responds quickly and clearly, consumers may feel that the company is reliable. Pavlou (2003) argued that trust can reduce perceived risk in online transactions. For Trip.com Group, fast social media replies can reduce consumers' anxiety and make them more willing to book through the platform.

4.2 Useful Interaction Improves Platform Credibility

Not all interaction can build trust. Simple promotional replies or automatic responses may not be enough. Consumers need useful and specific information. For example, a reply that explains refund steps, hotel distance, or travel tips is more valuable than a general answer. Useful interaction shows the platform's competence. When consumers believe that Trip.com Group can provide professional travel advice, they are more likely to trust its services. This is important because tourism decisions often involve money, time, and personal expectations.

4.3 User-Generated Content Increases Authenticity

User-generated content is another important trust-building factor. Official advertisements may sometimes look too commercial, but real users' photos, comments, travel diaries, and short videos are often seen as more authentic. Cheung and Thadani (2012) noted that electronic word-of-mouth can strongly influence consumer attitudes and decisions. For Trip.com Group, encouraging users to share real travel experiences can help potential consumers reduce doubt. When people see other tourists' actual experiences, they may feel that the platform information is more trustworthy.

4.4 Transparent Communication Reduces Perceived Risk

Transparency is very important in tourism services. Consumers care about prices, cancellation rules, refund time, hotel conditions, and service responsibilities. If social media communication avoids difficult questions or gives unclear answers, consumer trust may decrease.Trip.com Group can use social media to explain important service information in a simple and open way. Clear communication about booking conditions, price changes, and after-sales support can make consumers feel safer. Transparency can also reduce negative emotions when service problems happen.

4.5 Emotional Interaction Builds Relationship Trust

Trust is not only rational; it also has an emotional side. When a platform communicates warmly, understands consumers' concerns, and provides helpful suggestions, consumers may feel respected. This emotional connection can strengthen relationship trust. For example, travel content about family trips, cultural experiences, or personal travel stories can make the platform feel more human. Sashi (2012) argued that customer engagement can support stronger relationships between brands and consumers. For Trip.com Group, emotional interaction can help the platform become not only a booking tool, but also a travel companion.

5. Practical Suggestions

First, Trip.com Group should improve real-time social media response. Questions about booking, refund, hotels, and routes should be answered clearly and quickly. Second, the platform should encourage more authentic user-generated content. Real reviews, travel photos, and short videos can make the platform more credible. Third, Trip.com Group should strengthen transparent communication. Important information about prices, cancellation rules, and service responsibilities should be easy to understand. Fourth, the company should use humanized communication instead of only promotional language. Warm and helpful responses can improve emotional trust. Finally, Trip.com Group should connect social media interaction with customer service systems. If users raise problems on social media, the platform should guide them to effective solutions instead of only giving general replies.

6. Conclusion

This paper analyzed how social media interaction enhances consumer trust in tourism platforms, using Trip.com Group as a case background. The study shows that social media interaction can improve consumer trust through timely response, useful communication, user-generated content, transparent service information, and emotional connection. For online tourism enterprises, social media interaction is not only a marketing method. It is also a way to reduce perceived risk, improve credibility, and build long-term relationships with consumers. For Trip.com Group, strengthening social media interaction can help increase consumer confidence and support future purchase behavior. Future research can collect questionnaire data from Trip.com users and use regression analysis or structural equation modeling to test the relationship between social media interaction and consumer trust.

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DIGITAL TRANSFORMATION AND SMART TRAINING PLATFORMS IN STATE-OWNED CONSTRUCTION ENTERPRISES

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Abstract

State-owned construction enterprises are undergoing profound transformation as digital technologies reshape project management, workforce coordination, and operational efficiency. Traditional training systems in these organizations often rely on classroom instruction and experience-based learning, which are insufficient to support digital workflows and complex project environments. This paper examines the role of digital transformation and smart training platforms in enhancing workforce capability in state-owned construction enterprises. Drawing on digital transformation theory and workforce development research, the study explores how technologies such as cloud platforms, Building Information Modeling (BIM), mobile learning systems, and virtual simulation training support skills development and organizational modernization. The paper argues that smart training platforms improve learning accessibility, accelerate skill acquisition, and facilitate real-time knowledge sharing. The findings suggest that digital training ecosystems enhance productivity, safety performance, and organizational adaptability. The study provides managerial insights for state-owned construction enterprises seeking to modernize workforce development and support long-term digital transformation.

Keywords: Digital Transformation; Smart Training Platforms; State-Owned Enterprises; Construction Industry; Workforce Development.

1. Introduction

The construction industry is experiencing rapid digital transformation driven by advances in cloud computing, Building Information Modeling (BIM), data analytics, and automation technologies. These developments are transforming how projects are designed, coordinated, and executed. Digital transformation integrates technologies across workflows to improve efficiency, collaboration, and decision-making in construction projects.

State-owned construction enterprises (SOEs), which often manage large infrastructure and public projects, face increasing pressure to modernize their operations. However, workforce capability remains a critical bottleneck. Traditional training approaches—primarily classroom-based instruction and apprenticeship learning—are insufficient to support digital project environments and technology-driven workflows.

Smart training platforms, supported by digital technologies, provide new opportunities for workforce development. These platforms enable flexible learning, real-time knowledge sharing, and simulation-based skill development. Understanding how digital transformation reshapes training systems is essential for SOEs seeking to improve productivity and remain competitive in an increasingly digital construction landscape.

2. Digital Transformation in the Construction Sector

Digital transformation in construction involves integrating digital technologies across project lifecycles to improve efficiency, transparency, and collaboration. Historically, construction has lagged behind other industries in adopting technology, but increasing project complexity, labor shortages, and cost pressures are accelerating digital adoption.

Technologies driving transformation include:

1) Building Information Modeling (BIM)
2) cloud-based project management platforms
3) data analytics and digital dashboards
4) Internet of Things (IoT) monitoring systems
5) mobile field applications

Digital platforms enable real-time data sharing, improved coordination, and more accurate decision-making. The digitization of project management and data analytics tools is reshaping workforce roles and training needs.

However, successful digital transformation depends not only on technology adoption but also on workforce readiness and training.

3. Workforce Challenges in State-Owned Construction Enterprises

State-owned construction enterprises often operate with large, multi-generational workforces and es-

tablished bureaucratic procedures. Resistance to technological change, skills gaps, and limited digital literacy can slow digital adoption.

Older workers may be reluctant to adopt new technologies, highlighting the importance of training strategies that support technology acceptance and ease of use. At the same time, the industry faces labor shortages and increasing demand for tech-fluent talent, making workforce upskilling essential.

Traditional training approaches are insufficient to address these challenges. SOEs require scalable, flexible, and technology-supported training systems that can support continuous learning and digital competency development.

4. Smart Training Platforms and Digital Learning Ecosystems

Smart training platforms combine digital technologies, online learning systems, and data-driven learning management tools to enhance workforce training.

Typical components include:

1) cloud-based learning management systems (LMS)
2) mobile training applications
3) virtual reality (VR) and simulation-based training
4) BIM-based training modules
5) microlearning and on-demand tutorials

BIM training, for example, enables workers to improve project coordination, reduce rework, and enhance safety outcomes by understanding digital project models. Simulation and virtual training environments allow workers to practice complex or hazardous tasks safely and cost-effectively.

Digital upskilling improves efficiency, reduces errors, and enhances collaboration across project teams. These capabilities are particularly valuable in large-scale construction environments where coordination and accuracy are critical.

Table 1.

Key Features of Smart Training Platforms in Construction Enterprises

Platform Feature	Function	Organizational Benefit
Online learning modules	Flexible, self-paced learning	Expands training accessibility
BIM-based training	Digital project visualization	Improves coordination and accuracy
VR & simulation training	Safe practice environment	Enhances safety and skill mastery
Mobile learning tools	On-site knowledge access	Supports real-time problem solving
Data analytics tracking	Training performance monitoring	Improves training effectiveness

5. Benefits of Smart Training Platforms for State-Owned Enterprises

Smart training platforms support digital transformation by enhancing workforce capability and organizational adaptability.

First, they improve learning accessibility. Workers can access training materials anytime and anywhere, reducing downtime and improving knowledge retention.

Second, digital platforms accelerate skill acquisition. Microlearning modules and simulation training allow employees to practice tasks repeatedly and apply knowledge immediately.

Third, smart training platforms support knowledge sharing. Cloud-based systems enable real-time updates and collaboration across geographically dispersed project teams.

Finally, digital training strengthens safety performance. Simulation-based training allows workers to practice hazard response procedures in controlled environments, reducing workplace accidents.

6. Implementation Challenges

Despite their benefits, implementing smart training platforms in state-owned construction enterprises presents several challenges. Budget constraints and legacy systems may limit technology adoption. Organizational resistance to change can slow implementation. Additionally, digital platforms require strong IT infrastructure and cybersecurity safeguards.

Leadership commitment and phased implementation strategies are essential. Training programs must also be aligned with organizational goals and supported by continuous evaluation to ensure effectiveness.

7. Conclusion

Digital transformation is reshaping the construction industry, requiring state-owned construction enterprises to modernize workforce training systems. Smart training platforms provide an effective solution by enabling flexible learning, digital skill development, and real-time knowledge sharing.

By integrating digital learning tools, simulation technologies, and BIM-based training, SOEs can improve workforce competency, enhance safety performance, and strengthen organizational adaptability. Successful implementation requires leadership support, workforce engagement, and alignment between training initiatives and digital transformation strategies.

Future research may explore the integration of artificial intelligence, digital twins, and predictive analytics into smart training ecosystems to further enhance workforce development in construction enterprises.

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ENVIRONMENTAL SUSTAINABILITY INITIATIVES AND THEIR INFLUENCE ON REPURCHASE INTENTION IN THE COFFEE INDUSTRY: A STARBUCKS CASE

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Abstract

Environmental sustainability has become a strategic priority for firms in the coffee industry as consumers increasingly expect brands to take responsibility for environmental protection. This study explores how Starbucks' environmental sustainability initiatives influence customer repurchase intention. Based on the theories of planned behavior and green consumerism, this paper develops a conceptual model illustrating the relationship between perceived environmental responsibility, brand attitude, and repurchase intention. The findings suggest that Starbucks' environmental initiatives significantly improve consumers' attitudes toward the brand and positively affect their intention to repurchase.

Keywords: environmental sustainability, repurchase intention, green consumer behavior, Starbucks, corporate social responsibility.

1. Introduction

Environmental degradation, climate change, and waste pollution have forced firms in the food and beverage industry to rethink their production and consumption models. Starbucks has introduced multiple sustainability programs, including reusable cup incentives, waste reduction strategies, and carbon footprint reporting, in an attempt to align with global sustainability goals (Starbucks, 2023).

Previous research indicates that consumers are more likely to repurchase from brands that demonstrate credible environmental responsibility (Chen & Chang, 2013). However, the direct influence of such initiatives on repurchase intention within the coffee industry remains underexplored.

2. Literature Review

Environmental sustainability initiatives are defined as organizational efforts to reduce negative environmental impacts through responsible resource management, waste reduction, energy efficiency, and emissions control (Elkington, 1997). In the coffee industry, sustainability is particularly critical due to concerns related to deforestation, water consumption, packaging waste, and carbon emissions generated across the supply chain. As global awareness of climate change increases, consumers increasingly evaluate brands based on their environmental performance rather than only on price and product quality.

Repurchase intention represents a consumer's subjective probability of engaging in repeat purchasing behavior with the same brand or service provider (Hellier et al., 2003). Prior studies suggest that repurchase intention is strongly influenced by consumers' perceptions of brand responsibility and corporate ethics. When customers perceive a company as environmentally responsible, they are more likely to form favorable attitudes, which lead to repeat consumption and long-term loyalty (Martinez & Del Bosque, 2013).

Green consumer behavior theory proposes that individuals prefer products and services that are consistent with their personal environmental values (Chen & Chang, 2013). This value congruence creates psychological satisfaction and enhances emotional attachment to the brand. In the context of Starbucks, initiatives such as reusable cup programs, commitments to reduce waste, and public sustainability disclosures serve as cues that reinforce green brand image and credibility.

Furthermore, transparency plays a crucial role in shaping consumer responses to environmental sustainability practices. Du, Bhattacharya, and Sen (2010) argue that transparent CSR communication reduces skepticism and increases trust, thereby strengthening the effect of sustainability initiatives on consumer behavioral intentions. Therefore, environmental sustainability does not merely function as a symbolic gesture, but as a substantive mechanism that shapes brand attitude and repurchase intention in the coffee industry.

3. Conceptual Framework

This study proposes that Starbucks' environmental sustainability initiatives enhance positive brand attitude, which subsequently increases repurchase intention.

Table 1.

Conceptual variables and expected relationships

Variable	Description	Expected Relationship
Environmental Sustainability (ES)	Waste reduction, carbon control, recycling	ES → Brand Attitude (+)
Brand Attitude (BA)	Overall evaluation of Starbucks	BA → Repurchase (+)
Repurchase Intention (RI)	Willingness to buy Starbucks again	ES → RI (Indirect)

4. Discussion

Starbucks' environmental sustainability initiatives operate as strong market signals that communicate the company's long-term commitment to environmental responsibility. Programs such as reusable cup discounts, store-level waste sorting systems, and carbon footprint disclosure demonstrate that sustainability is embedded into Starbucks' operational model rather than existing only at the promotional level (Starbucks, 2023). These initiatives enhance consumers' perceptions of corporate credibility and shape more favorable brand attitudes.

From a psychological perspective, environmental initiatives create value congruence between Starbucks and its customers. Consumers who hold strong pro-environmental values are more likely to identify with brands that share similar beliefs, which increases emotional satisfaction and strengthens the consumer–brand relationship (Chen & Chang, 2013). This emotional bond goes beyond functional product attributes and becomes a key driver of repurchase intention.

In addition, sustainability initiatives reduce perceived risk in consumption decisions. Customers often face uncertainty regarding the true environmental impact of large multinational brands. Transparent reporting and visible green practices lower information asymmetry and reinforce consumers' confidence in Starbucks' environmental claims, which further promotes repeated purchasing behavior (Du et al., 2010).

Finally, environmental sustainability serves as a source of competitive differentiation in the highly saturated coffee market. As product quality becomes increasingly standardized across brands, Starbucks' visible commitment to sustainability allows the firm to position itself as a responsible lifestyle brand. This positioning not only enhances short-term sales, but also contributes to long-term customer retention and brand equity, thereby strengthening repurchase intention in a sustainable manner.

5. Conclusion

This study highlights the strategic role of environmental sustainability initiatives in shaping repurchase intention in the coffee industry. The Starbucks case suggests that firms that embed environmental responsibility into their core operations can achieve stronger consumer commitment and sustainable competitive advantage. Future research may employ empirical survey methods to validate the proposed relationships.

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THE MIXED EMPLOYMENT MODEL AND WORKFORCE EFFICIENCY IN CHINESE STATE-OWNED ENTERPRISES

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Abstract

Enhancing organizational performance has become a key objective of state-owned enterprise (SOE) reform in China. As part of mixed-ownership and governance modernization, many SOEs have adopted a mixed employment model that integrates state-appointed personnel, contract-based employees, external professionals, and outsourced labor. This paper examines how the mixed employment model influences organizational performance, using Ganzhou Urban Investment Holding Group Co., Ltd. as an illustrative case. Drawing on human capital theory, institutional theory, and public-sector reform research, the study explores how employment diversification improves productivity, managerial professionalism, operational flexibility, and innovation capacity. Evidence suggests that the model strengthens performance accountability and resource allocation while presenting challenges related to equity, coordination, and cultural integration. The paper concludes with managerial implications for optimizing workforce structures to support sustainable performance improvement in SOEs.

Keywords: state-owned enterprises, mixed employment model, organizational performance, workforce reform, China SOEs.

1. Introduction

State-owned enterprises play a strategic role in China's economic and social development, particularly in infrastructure construction, public services, and regional development. Traditionally, SOEs operated under rigid employment systems characterized by administrative appointments, lifetime employment, and limited performance-based incentives. While this system supported social stability, it often reduced productivity and weakened accountability.

In recent decades, China has promoted SOE reform to enhance efficiency and competitiveness. A central element of reform has been the transformation of employment systems toward market-oriented human resource management. The mixed employment model has emerged as an important mechanism for improving workforce efficiency and organizational performance.

Ganzhou Urban Investment Holding Group Co., Ltd. serves as a representative local government financing and infrastructure platform enterprise. The group is responsible for financing, construction, and management of regional infrastructure and development projects. Its core business includes urban infrastructure construction, land development, and related services. As a state-owned entity supporting regional development policies, the group integrates public service responsibilities with market-oriented operational practices. These characteristics make it a relevant example for examining how mixed employment structures influence organizational performance.

2. Theoretical Foundations

Human capital theory suggests that organizational performance improves when enterprises effectively allocate skills and incentivize productivity (Becker, 1964). Traditional SOE employment systems limited labor mobility and reduced performance incentives. By introducing contract-based employment and external expertise, organizations can improve talent utilization and operational efficiency.

Institutional theory emphasizes that SOEs operate within hybrid institutional environments combining government oversight with market pressures. Employment diversification represents an adaptive response, allowing SOEs to maintain political responsibilities while adopting market-oriented management practices.

Public-sector reform research indicates that workforce diversification enhances accountability, strengthens performance evaluation systems, and increases managerial flexibility. However, integrating employees under different employment conditions may create governance and coordination challenges.

3. Mixed Employment Practices at Ganzhou Urban Investment Holding Group

As a regional infrastructure investment and development platform, Ganzhou Urban Investment Holding Group requires a diverse workforce capable of managing financing, construction, asset operations, and public service projects. To support these complex functions, the organization employs a mixed workforce structure.

State-appointed personnel play an important role in ensuring policy compliance, government coordination, and strategic alignment with municipal development priorities. Contract-based employees are recruited through competitive mechanisms and contribute to operational efficiency and project execution.

The group increasingly relies on professional managers, engineers, financial specialists, and project management experts recruited from the market to improve technical capacity and managerial professionalism. In addition, outsourced labor supports construction, maintenance, and auxiliary services, enabling flexible workforce deployment.

This employment diversification aligns with the group's role as a financing and construction platform for major infrastructure and development projects in the region.

4. Mechanisms Linking Mixed Employment to Organizational Performance

The mixed employment model enhances organizational performance through multiple mechanisms.

First, diversified recruitment improves talent quality and skill alignment. External professionals bring specialized expertise in engineering, finance, and project management, strengthening technical competence and decision-making quality.

Second, performance-based employment arrangements strengthen accountability. Contract employees and professional managers are evaluated using performance indicators linked to project outcomes and financial performance, encouraging efficiency and responsibility.

Third, workforce flexibility improves operational responsiveness. Infrastructure projects often require rapid adjustments in staffing levels and specialized skills. Outsourcing and temporary employment allow the organization to respond efficiently to project cycles and market demands.

Fourth, the integration of market-oriented professionals promotes managerial modernization. Professional management practices improve cost control, risk management, and project governance.

Table 1.

Mixed Employment Structure and Organizational Performance Effects

Employment Category	Organizational Role	Performance Impact
State-appointed personnel	Policy alignment & governance	Strategic stability
Contract employees	Project execution	Productivity and accountability
External professionals	Technical & managerial expertise	Innovation and efficiency
Outsourced workers	Operational support	Cost control and flexibility

5. Organizational Performance Outcomes

The adoption of the mixed employment model contributes to improved organizational performance in several ways. Enhanced professional expertise supports the effective implementation of infrastructure and urban development projects, improving project quality and timeliness. Workforce diversification also strengthens financial discipline and cost management, which is critical for government financing platform enterprises.

Moreover, the integration of market-based management practices enhances operational efficiency and promotes innovation. As the group engages in sustainable infrastructure and public service projects aligned with regional development goals, professional expertise supports effective planning and execution.

The mixed employment model also supports sustainability and modernization initiatives. The group's involvement in sustainable financing and infrastructure development reflects the growing importance of professional management and technical expertise in achieving environmental and social objectives.

6. Challenges and Management Considerations

Despite its advantages, the mixed employment model introduces several challenges. Differences in compensation, job security, and promotion opportunities between permanent and contract employees may create perceptions of inequality and reduce morale. Cultural differences between traditional administrative staff and market-oriented professionals may also affect collaboration.

Coordination complexity increases when employees operate under different evaluation systems and management expectations. Without effective communication and integration mechanisms, these differences may reduce organizational cohesion.

Additionally, balancing market efficiency with public service responsibilities remains a critical governance challenge. As a government-linked enterprise, the group must maintain social objectives while improving operational performance.

7. Conclusion

The mixed employment model represents an important evolution in workforce management within Chinese state-owned enterprises. Evidence from Ganzhou Urban Investment Holding Group Co., Ltd. suggests that employment diversification enhances organizational performance by improving talent allocation, strengthening accountability, increasing flexibility, and promoting managerial modernization.

However, successful implementation requires effective governance, equitable human resource practices, and cultural integration. As China continues to modernize SOEs, optimizing mixed employment systems will be essential for improving efficiency while fulfilling public service responsibilities.

Future research should conduct empirical analysis across multiple regional infrastructure SOEs to evaluate the long-term performance effects of employment diversification. Such research will deepen understanding of workforce reform in hybrid institutional environments and support evidence-based policy development.

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THE IMPACT OF EMPLOYEE TRAINING ON SERVICE QUALITY IN TOURISM ENTERPRISES: A CASE STUDY OF KUNMING FENGQING INTERNATIONAL TOURISM CO., LTD

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Abstract

Employee training plays an important role in improving service quality in tourism enterprises. Since tourism products are mainly experienced through direct contact between employees and tourists, employees' professional knowledge, communication ability, problem-solving skills, and service attitude directly influence tourist satisfaction. Taking Kunming Fengqing International Tourism Co., Ltd. as a case background, this paper discusses how employee training affects service quality in tourism enterprises. Based on human capital theory and service quality theory, the study argues that systematic training can improve employees' service competence, reduce service mistakes, and strengthen customer-oriented behavior. However, training will be less effective if it is only formal, short-term, or not connected with real service situations. Therefore, tourism enterprises should build a practical training system that combines job skills, service standards, emergency response, and local cultural knowledge.

Keywords: employee training; service quality; tourism enterprises; tourist satisfaction; Kunming Fengqing International Tourism Co., Ltd.

1. Introduction

Tourism enterprises are typical service-oriented organizations. Unlike physical products, tourism services are produced and consumed at almost the same time. This means that employees' performance becomes part of the tourism product itself. A friendly guide, a patient customer service worker, or a professional reception employee can improve tourists' travel experience. By contrast, poor communication, slow response, or wrong information may directly damage tourist satisfaction. Kunming Fengqing International Tourism Co., Ltd. operates in a tourism market where tourists have increasingly high expectations for service quality, travel safety, cultural explanation, and personalized experience. In this context, employee training is not only a human resource activity, but also a key way to improve enterprise competitiveness. According to Becker's human capital theory, training can increase employees' knowledge and skills, which may further improve organizational performance (Becker, 1964). Therefore, this paper explores the impact of employee training on service quality in tourism enterprises.

2. Literature Review

Employee training refers to planned activities that help employees improve their knowledge, skills, attitudes, and work behaviors. Noe (2020) points out that effective training should be closely connected with job needs and organizational goals. In tourism enterprises, training usually includes service etiquette, destination knowledge, communication skills, complaint handling, safety management, and digital service tools. Service quality refers to the gap between customer expectations and actual service perceptions. Parasuraman, Zeithaml, and Berry (1988) developed the SERVQUAL model, including reliability, responsiveness, assurance, empathy, and tangibles. This model is especially useful for tourism enterprises because tourists often judge service quality through employee behavior and service process. Previous studies suggest that employee training can improve service quality by enhancing professional skills and service awareness. Goldstein and Ford (2002) argue that training can change employee behavior when training content is practical and supported by the organization. In tourism enterprises, trained employees are more likely to provide accurate information, handle tourist complaints, and respond to unexpected problems. This shows that employee training is closely related to tourist satisfaction and service reputation.

3. Case Analysis: Kunming Fengqing International Tourism Co., Ltd.

For Kunming Fengqing International Tourism Co., Ltd., employee training may influence service quality in several ways. First, training improves employees' professional knowledge. Tourism employees need to understand travel routes, local culture, safety rules, ticket information, accommodation arrangements, and emergency procedures. If employees lack basic professional knowledge, tourists may receive unclear or incorrect information. This will reduce the reliability of service. Second, training improves communication and emotional service ability. Tourism employees often communicate with tourists from different

regions and backgrounds. Some tourists may be anxious, dissatisfied, or unfamiliar with local travel conditions. Through communication training and service etiquette training, employees can learn how to listen, explain, comfort, and solve problems more effectively. Third, training strengthens employees' problem-solving ability. Tourism services are easily affected by weather, traffic, tourist flow, and unexpected incidents. Employees who have received emergency response training can react more calmly and reduce service risks. This is important because service recovery can influence whether tourists still trust the company after a problem occurs (Zeithaml, Bitner, & Gremler, 2018).

Table 1.

Employee Training and Its Impact on Service Quality

Training Content	Main Purpose	Impact on Service Quality
Service etiquette training	Improve employees' manners, language, and service attitude	Enhances tourists' first impression and emotional experience
Tourism knowledge training	Help employees understand routes, culture, products, and policies	Improves service reliability and accuracy
Complaint-handling training	Teach employees how to respond to dissatisfaction	Improves service recovery and reduces conflict
Safety and emergency training	Prepare employees for accidents, weather changes, and tourist flow pressure	Improves service assurance and risk control
Digital service training	Improve the use of online booking, customer systems, and platform tools	Enhances service efficiency and response speed

As shown in Table 1, employee training is not a single activity. It should cover both technical skills and soft service skills. For tourism enterprises, good service quality depends not only on what employees know, but also on how they communicate and respond in real situations.

4. Discussion

The case of Kunming Fengqing International Tourism Co., Ltd. shows that training should be practical and continuous. In some tourism enterprises, training is often arranged only before the peak season or when new employees enter the company. This kind of training may solve short-term problems, but it cannot fully support long-term service quality improvement. A better training system should begin with training needs analysis. Managers should collect information from tourist complaints, online reviews, employee feedback, and service quality evaluations. Then, training content should be designed according to real problems. For example, if tourists often complain about unclear explanations, the company should strengthen product knowledge and communication training. If service delays often occur during peak seasons, the company should improve process training and emergency coordination.

In addition, training evaluation is also necessary. Kirkpatrick and Kirkpatrick (2016) suggest that training effectiveness can be evaluated from reaction, learning, behavior, and results. For tourism enterprises, this means managers should not only ask whether employees like the training, but also observe whether employees actually improve their service behavior and whether tourist satisfaction increases after training.

5. Conclusion

This paper analyzed the impact of employee training on service quality in tourism enterprises, taking Kunming Fengqing International Tourism Co., Ltd. as a case background. The study finds that employee training can improve service quality by enhancing professional knowledge, communication skills, problem-solving ability, and service awareness. However, training must be closely connected with real tourism service situations. If training is only formal or theoretical, it may not bring clear improvement. Therefore, Kunming Fengqing International Tourism Co., Ltd. should build a systematic training mechanism, including training needs analysis, practical training content, continuous learning, and training effectiveness evaluation. In this way, employee training can become an important tool for improving tourist satisfaction, service reputation, and long-term competitiveness.

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MEDICAL SCIENCES

DETECTION AND GRADING OF MITRAL REGURGITATION USING R-CNN

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Abstract

Mitral regurgitation is among the most prevalent valvular pathologies, with incidence rising with age. If left untreated, severe mitral regurgitation carries a substantial risk of cardiovascular complications and mortality, including heart failure, arrhythmias, and pulmonary hypertension. Transthoracic echocardiography remains the primary noninvasive diagnostic tool; however, its interpretation relies heavily on expert experience and requires considerable time investment.

This study aims to develop a fully automated system utilizing deep learning techniques for the detection and severity assessment of mitral regurgitation in color Doppler echocardiography images.

A deep learning-based automated pipeline was developed to detect and stratify the severity of mitral regurgitation (MR) using a large dataset of apical four-chamber and apical two-chamber echocardiogram videos with color Doppler imaging of the mitral valve (Emergency Cardiology Center). Echocardiographic data collected between 2017 and 2025, comprising over 3,600 videos, were used to obtain 761 annotated images.

The model was trained in the MATLAB environment utilizing the R-CNN architecture. Detection and severity assessment of mitral regurgitation were conducted using deep learning methods implemented in MATLAB, with a focus on computer vision techniques.

Test results demonstrated greater than 95% accuracy in mitral regurgitation detection and over 80% accuracy in classification. These findings suggest that integrating artificial intelligence substantially reduces analysis time and enhances clinical decision-making.

Keywords: Mitral regurgitation, Echocardiography, Deep learning, R-CNN, Computer vision, Artificial intelligence.

Intruduction

Heart disease often worsens over time without noticeable symptoms, making it difficult, if not impossible, to reverse. Regular cardiac imaging provides essential physiological insights that lead to improved patient outcomes.

Mitral regurgitation is a common heart valve disorder, and its incidence increases with age. Without treatment, severe mitral regurgitation can lead to complications such as cardiac arrhythmias and a higher risk of death. The severity of mitral regurgitation is unevenly distributed, with milder cases more common than severe ones. Accurate assessment of mitral regurgitation severity is essential for preoperative evaluation, intraoperative management, and postoperative monitoring.

Mitral regurgitation plays a crucial role in the development and progression of heart failure, both as a consequence of underlying heart disease and as a catalyst for further cardiac deterioration. It causes retrograde blood flow into the left atrium during systole, leading to volume overload and increased left ventricular pressure, which, over time, results in muscle weakness, dilation, and failure.

Accurate diagnosis of mitral regurgitation requires a comprehensive assessment using echocardiography and Doppler imaging. Transthoracic echocardiography is the primary imaging method for diagnosing mitral regurgitation because it is safe, non-invasive, and efficient. Assessment of mitral regurgitation largely depends on clinicians' subjective judgement, which can lead to high labour costs, poor reproducibility, and inconsistency. Image segmentation techniques can address these issues by enabling automatic, precise delineation of regurgitation areas. Accurate segmentation improves ultrasound image analysis, aids lesion identification and localisation, and supports early detection and treatment of mitral regurgitation.

This study presents the development and validation of a fully automated deep learning method for identifying images from colour Doppler echocardiography videos and for detecting clinically significant (moderate or severe) mitral regurgitation in transthoracic echocardiograms.

In recent years, artificial intelligence has been increasingly applied in ultrasound medicine, particularly in cardiovascular disease. Despite these advances, limited research has examined the use of AI to assess the severity of mitral regurgitation (MR) from transthoracic echocardiography (TTE). Existing studies primarily focus on two areas: classification of MR severity and segmentation of the MR region. In this study, a Region-Based Convolutional Neural Network (R-CNN) was employed for the automatic qualitative assessment of MR.

Data ascuisition and preprocessing

Ultrasound images were collected from the emergency cardiology centre, resulting in a dataset of 761 apical four-chamber colour Doppler echocardiograms

labelled as “mitral regurgitation.” The Department of Echocardiography acquired these images between January 2017 and July 2025.

To enhance presentation and facilitate annotation, the collected colour Doppler echocardiograms were converted from DICOM format to AVI file. From each video, frames that most accurately depicted regurgitation were selected. All images were standardized by defining sectors as regions of interest (ROI). Mitral regurgitation (MR) regions in all relevant frames were annotated using imageLabeler .

The dataset includes 121 images with mild mitral regurgitation (MR), 191 with moderate MR, and 449 with severe MR. Low-quality or unclear images, as well as data from cases with easily overestimated eccentric MR, were excluded during data acquisition. All images were acquired using a Siemens ultrasound system and stored in DICOM format.

The annotation process combines cardiologist expertise with machine learning requirements to ensure the generation of high-quality ground truth data. Quality control is achieved through multi-expert review, which reduces inter-observer variability. The resulting dataset enables the training and evaluation of computer vision models for both localization and severity classification tasks. This framework establishes the feasibility of using region-based convolutional neural networks for automated assessment of mitral valve pathology and lays the groundwork for the advancement of AI-assisted cardiac imaging tools.

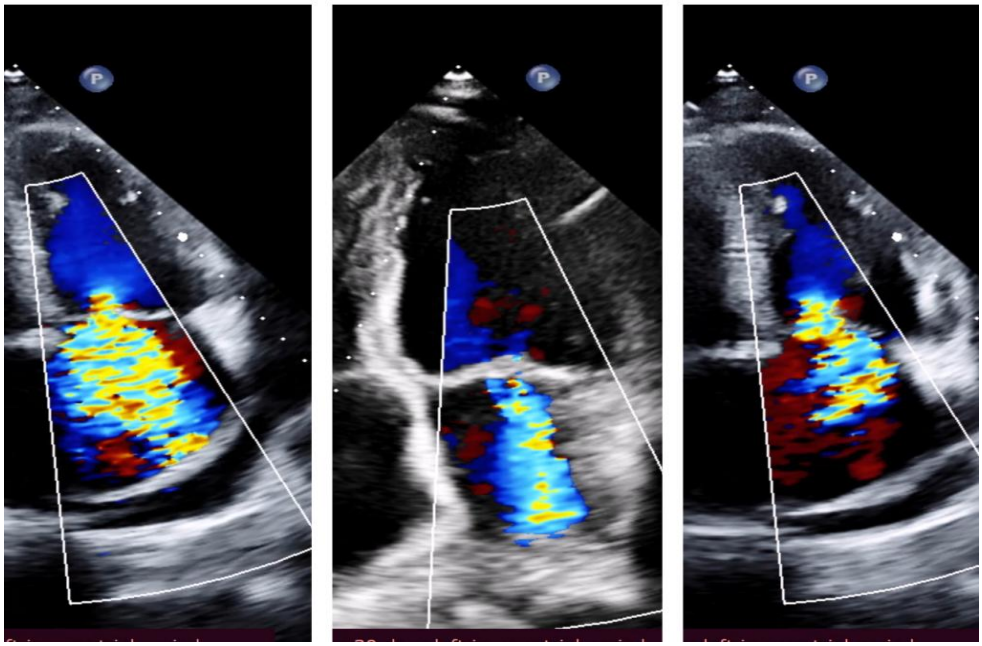

Figure1: Ultrasaund pictures from ultrasound videos

This approach employs computer vision techniques and a Region-based Convolutional Neural Network (R-CNN) to detect and assess the severity of Mitral Regurgitation in echocardiographic images. The dataset comprises color Doppler echocardiography frames, which clinical experts have annotated with bounding boxes to localize the regurgitant jet and assigned corresponding severity labels (mild, moderate, severe).

Before training, all images were resized and normalized to maintain consistency. The R-CNN model was then trained in a supervised manner, using the annotated bounding boxes as ground truth for both object localization and severity classification.

Model Training

A computer vision–based approach utilizing a Region-based Convolutional Neural Network (R-CNN) was employed to detect and classify Mitral Regurgitation in echocardiographic images. Expert-annotated images generated with the MATLAB Image Labeler tool supplied bounding box regions of interest (ROIs) and corresponding severity labels (mild, moderate, severe).

The dataset was partitioned into training and testing subsets to facilitate unbiased evaluation. During training, images were processed through the R-CNN framework to predict both the location of the regurgitant jet and its severity class. Model optimization utilized a combination of classification and localization loss functions, which enabled simultaneous learning of object detection and severity assessment.

An object detector utilizing the R-CNN architecture was implemented, offering the following capabilities:

* Object Detection
* Classification

This study employed a computer vision-based machine learning approach. For model training, regurgitation was annotated in the dataset using the Matlab imageLabeler tool.

The region of interest (ROI) was defined using color-coded quadrilateral polygons: orange for mild regurgitation, purple for moderate regurgitation, and green for severe pathology.

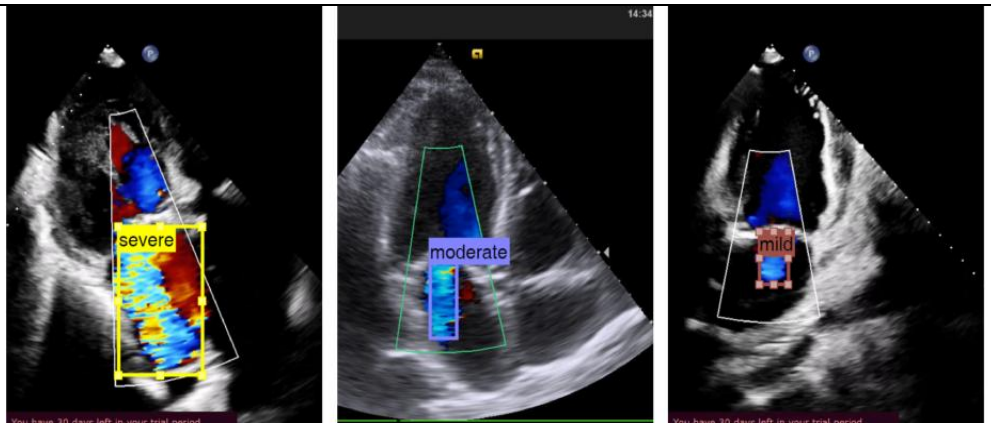

Figure 2. ROI Label 3 Color

The model training involved multiple steps to ensure accurate identification of the regurgitation zone and its severity.

Evaluation of the Model

The model exhibited strong detection capability, achieving an accuracy greater than 90% in identifying mitral regurgitation. This outcome demonstrates that the approach reliably distinguishes pathological cases from normal or non-regurgitant samples. Furthermore, the model achieved over 80% accuracy in classifying MR severity into mild, moderate, and severe categories, indicating robust performance across all stages of disease progression.

• Detection of mitral regurgitation: accuracy exceeding 95%

• Classification of severity: accuracy exceeding 80%.

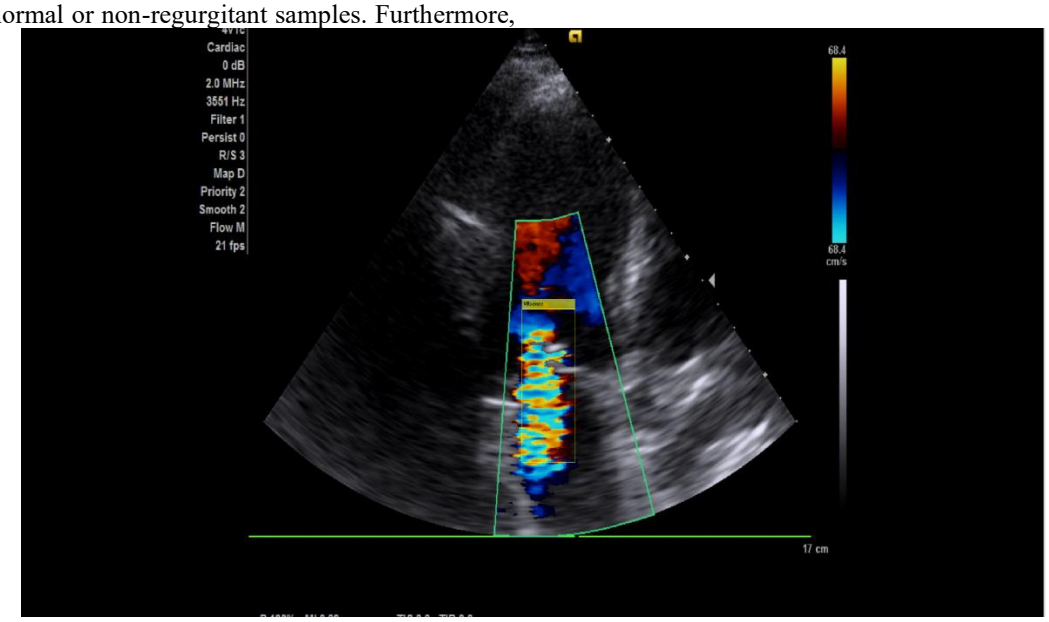

Figure: 3 Detection of Severe Mitral Regurgitation

Conclusion

Accurate assessment of mitral regurgitation (MR) severity is critical for effective clinical management. This study employed the Mask R-CNN algorithm to qualitatively evaluate MR using color Doppler echocardiography images. The model demonstrated robust performance and accurately assessed MR severity. Integrating echocardiography images with deep learning techniques reduces analysis time and facilitates more rapid clinical decision-making. The proposed model represents a promising tool for the evaluation of MR severity.

In clinical practice, this approach could be integrated into echocardiography workflows to provide decision support during image interpretation. For instance, as a cardiologist reviews color Doppler images, the system could simultaneously highlight the suspected regurgitant jet region and suggest a severity grade. This integration may reduce inter-observer variability, a recognized challenge in MR evaluation, particularly in borderline cases between mild and moderate severity.

In our study, we developed novel methods that use recent computer vision advances to automate key aspects of echocardiogram interpretation. The system detects mitral regurgitation and classifies its severity.

This model provides a foundation for future advancements in artificial intelligence applications in echocardiography.

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THE ANTI-INFLAMMATORY ROLES OF VITAMIN D FOR IMPROVING HUMAN HEALTH

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Abstract

Vitamin D receptors (VDRs) are present in almost all cells of the immune system, including B cells, T cells, NK (Natural Killer) cells, dendritic cells, and monocytes, as well as the epithelial cells of many organs such as the intestine, pancreas, prostate, lungs, and cardiomyocytes. In addition, some immune cells, including dendritic cells, macrophages, and B and T cells, can synthesize calcitriol by expressing 1α-hydroxylase. Upon binding to VDRs, vitamin D (Vit D) regulates the expression of genes involved in immune responses, including those encoding for cytokines. It modulates the production of pro-inflammatory cytokines while promoting the synthesis of anti-inflammatory cytokines. Vit D also affects the differentiation and maturation of cells of the immune system. By inhibiting the nuclear factor kappa B (NF-κB) and mitogen-activated protein kinase (MAPK) pathways, Vit D reduces the expression of pro-inflammatory genes. These effects highlight the potential of Vit D as a therapeutic agent in the management of inflammatory diseases, including autoimmune disorders, cardiovascular diseases, diabetes, metabolic syndrome, cancer, neurological diseases, depression, and inflammatory bowel disease.

Keywords: vitamin D, inflammation, autoimmune disease, immune activation.

1. Introduction

Vitamin D (Vit D) is a fat-soluble vitamin that plays an important role in calcium metabolism and bone health, but its role goes beyond the traditional role. After the discovery of the presence of the Vit D receptors (VDRs) and the enzymes that activate Vit D in many cells other than cells related to bone and mineral metabolism, the non-classical effects of Vit D have been proven by many scientific studies (1-3). There are two types of Vit D (calciferol): vitamin D2 (ergocalciferol) and vitamin D3 (cholecalciferol) (4). Vitamin D2 is obtained from foods (sun-grown mushrooms, fortified foods, and dairy products), while vitamin D3 is obtained from animal foods (fish, liver, margarine, milk, eggs, meat). Vitamins D2 and D3 are then absorbed by the small intestine via passive transport. The bioequivalence of the different forms of Vit D has been questioned in many studies and Vit D2 has been found to be either equivalent or slightly less potent than Vit D3 for obtaining optimal serum 25-hydroxyvitamin D concentrations, at least when given in daily dosages. However, when given intermittently, Vit D2 is clearly less potent than Vit D3 [5,6,7]. Vit D is also produced from the skin upon exposure to ultraviolet B (UVB) radiation. Vit D obtained from the skin and diet and is metabolized in the liver to 25-hydroxyvitamin D, which is used to determine a patient's Vit D status. 25-Hydroxyvitamin D is metabolized in the kidneys by 25-hydroxyvitamin D-1α-hydroxylase (CYP27B1) to its active form, 1,25-dihydroxyvitamin D (calcitriol) (1,4).

The role of Vit D in human health has garnered significant attention in recent years, particularly regarding its anti-inflammatory properties (3,4,8,9,10,11,12). Inflammation is defined as a host reaction to infections and tissue damage, but many studies have shown that it also plays a role in the pathophysiology of chronic diseases (4,8,9,11,12). The relationship between Vit D and inflammation has been the subject of extensive investigation in recent years (8-12).

This literature review aims to synthesize existing research on the anti-inflammatory roles of vitamin D, elucidating its mechanisms of action, clinical implications, and potential therapeutic applications.

2. The Roles of Vit D in Diseases

VDRs and the Vit D activating enzyme 1-α-hydroxylase (CYP27B1) are expressed in many cell types such as intestine, pancreas, prostate, dendritic cells, and cells of the immune systems (T cells, B cells, macrophages) as well as bone and mineral tissue (1,4). The active form of Vit D binds to VDRs, forming a ligand–receptor complex. This complex binds to specific DNA sequences called Vit D response elements (VDREs) located in the promoter regions of target genes (1-3). Binding to VDREs initiates gene transcription, leading to the production of proteins that mediate the anti-inflammatory effects of Vit D. The Vit D-VDR complex modulates the immune response by influencing the differentiation and function of various immune cells, such as T cells, B cells, dendritic cells, and macrophages (1,4). They also regulate cell growth and differentiation in various tissues, including skin, breast, and prostate, playing a role in carcinogenesis (3).

The role of Vit D against infectious agents is to enhance the differentiation of macrophages, which in turn release cytokines and phagocytose bacteria(3). In addition, by binding to the "anti-microbial peptides", Vit D enhances the "microbicidal activity" of phago-

cytes (12). Vit D has been shown to induce the transcription of anti-microbial peptides—such as cathelicidin and defensin β2—in different human cell lines, including myeloid cells, monocytes/macrophages, and neutrophils (3,12).

Many studies have shown that Vit D can regulate the production of pro-inflammatory cytokines such as tumor necrosis factor-α (TNF-α), interleukin-6 (IL-6), interferon gamma, and interleukin-1β (IL-1β) while stimulating the synthesis of anti-inflammatory cytokines such as interleukin-10 (IL-10) (8-13). Vit D inhibits the nuclear factor kappa B (NF-κB) and mitogen-activated protein kinase (MAPK) pathways and reduces the expression of pro-inflammatory genes (8,10). These effects suggest the potential of Vit D as a therapeutic agent in the management of inflammatory diseases, including autoimmune disorders, cardiovascular diseases, diabetes, metabolic syndrome, cancer, neurological diseases, depression, inflammatory bowel disease, and respiratory conditions like chronic obstructive pulmonary disease (COPD) and asthma (8,11,13-15).

Vit D can also prevent chronic diseases by controlling oxidative stress in various ways such as inducing the expression of molecules involved in antioxidant protection, including glutathione, glutathione peroxidase, and superoxide dismutase (SOD), and inhibiting the expression of NADPH oxidase (13-15). The antioxidant effects of Vit D also play important roles in chronic diseases. But this review article aimed to focus on the anti-inflammatory effects of Vit D rather than its antioxidant effects.

3. The Anti-Inflammatory Roles of Vit D in Autoimmune Diseases

Autoimmune diseases, characterized by dysregulated immune responses and chronic inflammation, have been particularly highlighted in the context of Vit D deficiency. Studies show that individuals with autoimmune diseases such as rheumatoid arthritis (RA), systemic lupus erythematosus (SLE), ankylosing spondylitis, psoriatic arthritis (PsA), Sjögren's disease and inflammatory myopathies, inflammatory bowel disease (IBD), Crohn's disease, ulcerative colitis, Hashimoto's thyroiditis, type 1 diabetes (T1D), and neurodegenerative diseases such as Alzheimer's (AD), Parkinson's disease (PD), and multiple sclerosis (MS) often have lower Vit D levels (15-31) .

In RA, Vit D levels were found to be associated with disease activity (17,18). In SLE, it is shown that Vit D is inversely associated with disease activity and renal involvement (17,21,22). Vit D deficiency may be associated with the development of neuropathy and lymphoma in Sjögren's disease (19). Most studies on Vit D supplementation have shown benefits in preventing or treating the effects of autoimmune diseases (23,24,29,31). Vit D deficiency in IBD results from the inability to form and absorb Vit D micelles and chylomicrons in the intestine, increasing the risk of osteomalacia and osteoporosis (21). Decreased Vit D levels are a biomarker of IBD activity and predictive of poor patient outcomes. In MS, Vit D supplementation shows a synergistic effect when combined with interferon β (22). Barghava et al. showed that Vit D supplementation reduced oxidative stress (γ-glutamyl amino acids, glutathione) and caused alterations in xenobiotic metabolism (benzoate, caffeine) in patients with MS (23). Most studies have shown that serum levels of IL-10 and transforming growth factor (TGF)-β1 increased after Vit D supplementation, and some have reported that disability scores were reduced after Vit D supplementation in MS patients (29).

All immune cells express VDR and are therefore sensitive to calcitriol-mediated regulation. Additionally, some immune cells, including dendritic cells, macrophages, and B and T cells, can produce calcitriol by expressing 1α-hydroxylase (1,4,21,22). Vit D can affect the maturation and migration of different dendritic cell subtypes and their production of cytokines and chemokines (1,21). The interaction of Vit D with VDR prevents dendritic cell differentiation and maturation (14-17). This increases their tolerogenic state and reduces the production of pro-inflammatory cytokines (IL-6, IL-12, IL-23) and TNF-α (25,29). Furthermore, it promotes the production of anti-inflammatory cytokines (IL-8, IL-10) and down-regulates the expression of major histocompatibility complex classes I and II and surface molecules (CD40, CD80, CD83, CD86) (2,21,22). One of the key mechanisms through which Vit D impacts the immune response is promoting the differentiation of Tregs. Tregs are a specialized subset of immune cells that play a crucial role in maintaining immune tolerance (21). Tregs act as suppressors of inflammation, preventing an overactive immune response. Vit D prevents B cells from differentiating into plasma cells and producing antibodies (21,22). Vit D may also reduce T helper (Th) cell differentiation and proliferation (2,21,22). In particular, Th1 and Th17 subpopulations are reduced, and Th2 differentiation is promoted in CD4+ T cells, producing IL-4. Tregs play a crucial role in suppressing the activation and function of Th1 and Th17 cells (2,13,19). These effects on immune cells may explain the pivotal role of Vit D in the pathogenesis of various autoimmune diseases. Moreover, clinical trials have suggested that Vit D supplementation may reduce disease activity and improve clinical outcomes in patients with autoimmune diseases (16, 21-24, 29-31).

4. The Anti-Inflammatory Roles of Vitamin D in Cardiovascular Diseases

The cardiovascular system is another area where Vit D's anti-inflammatory effects have been investigated. Chronic inflammation is a well-established contributor to the development of atherosclerosis and other cardiovascular diseases. Atherosclerosis, a chronic inflammatory disease characterized by plaque accumulation in arterial walls, is a leading cause of cardiovascular events such as heart attacks and strokes (13,32). Traditionally, atherosclerosis has been known to result from the retention of lipoproteins, primarily low-density lipoprotein (LDL) cholesterol, in the intimal space of arteries. The retained LDL is modified and taken up by scavenger receptor-mediated phagocytosis, forming foam cells, which are cholesterol-laden cells that contribute to forming fatty plaques. This process results in the continued growth of inflammatory fatty infiltrates rich in leukocytes that appear macroscopically as plaques (32). Vit D deficiency has been linked to mark-

ers of subclinical atherosclerosis, such as increased carotid intima-media thickness and coronary artery calcification (33). These findings suggest that Vit D plays a significant role in the pathogenesis of atherosclerosis (13,33). Endothelial dysfunction, characterized by impaired nitric oxide (NO) bioavailability, increased oxidative stress, and increased pro-inflammatory signaling, plays a crucial role in the early stages of atherosclerosis (13,33-39). Vit D shows its anti-inflammatory effects by suppressing the production of pro-inflammatory cytokines such as TNF-α and IL-6 (8-13). These cytokines are known to contribute significantly to the pathogenesis of atherosclerosis by promoting endothelial dysfunction, facilitating the recruitment of leukocytes to arterial walls, and facilitating the formation of foam cells within atherosclerotic plaques (32). Additionally, VDR activation in endothelial cells results in the inhibition of NF-κB gene expression, leading to down-regulation of pro-inflammatory and pro-thrombogenic cytokines such as IL-6, as well as the up-regulation of thrombomodulin and IL-10 (34,35). Vit D suppresses vascular calcifications and prevents the development of atherosclerotic plaques by inhibiting the transformation of macrophages into foam cells (35,37,39). Vit D also suppresses the expression of adhesion molecules on endothelial cells, thereby reducing the adhesion and migration of leukocytes into the arterial walls (13,35).

Furthermore, Vit D reduces inflammation and stabilizes atherosclerotic plaques by promoting the differentiation of Tregs and suppressing the activity of Th1 and Th17 cells (36). Additionally, Vit D supports the production of NO, an important molecule that regulates vascular tone and maintains optimal blood flow. NO acts as a vasodilator, helping to relax blood vessels and improve endothelial function. Vit D counteracts the negative effects of endothelial dysfunction by increasing NO production, thereby supporting the maintenance of healthy blood vessel function (13,35,37). Oxidative stress is a major contributor to endothelial dysfunction, causing damage to the endothelial wall and impairing the ability to regulate blood flow and vascular health. The antioxidant effects of Vit D protect endothelial cells from oxidative damage, maintaining their functionality and promoting vascular health (13,33-35).

Dyslipidemia, characterized by imbalances in cholesterol levels, particularly elevated LDL cholesterol and reduced high-density lipoprotein (HDL) cholesterol, is a major risk factor for the development of atherosclerosis. Vit D has been shown to have beneficial effects on lipid metabolism. It promotes the expression of specific genes involved in cholesterol efflux, such as ATP-binding cassette transporter A1 (ABCA1). ABCA1 is crucial in removing cholesterol from foam cells, which are key players in forming atherosclerotic plaques (13,38). Thus, Vit D promotes cholesterol efflux from the endothelium, stabilizing the plaques. Stable plaques are less prone to rupture and thrombosis, reducing the risk of cardiovascular events such as heart attacks and strokes. Furthermore, Vit D can influence the expression and activity of enzymes involved in lipid metabolism, such as hepatic lipase and lipoprotein lipase, helping to maintain a favorable lipid profile (13). Through the limitation of scavenger receptor expression on the macrophage surface, Vit D reduces LDL uptake by macrophages (39).

Hypertension, a major risk factor for cardiovascular events, is influenced by multiple factors, including vascular tone, renal function, and the renin–angiotensin–aldosterone system. Vit D plays a role in blood pressure regulation through several mechanisms. It inhibits the renin–angiotensin system, promotes the production of vasodilatory molecules such as NO, and regulates calcium homeostasis in vascular smooth muscle cells (35,37,39). Vit D appears to decrease the activity of the cyclic adenosine monophosphate response element in the renin gene promoter (13). Vit D deficiency has been associated with an increased risk of hypertension, whereas Vit D supplementation has shown potential benefits for lowering blood pressure. Vit D promotes proper vasodilation and regulates blood flow by improving endothelial function, reducing oxidative stress, and modulating inflammatory pathways(13,33-38).

VDR and the enzyme 1-α-hydroxylase, necessary to form the active form of Vit D, are also found in ventricular cardiomyocytes. Upon binding to VDRs of cardiomyocytes, Vit D is activated and prevents the remodeling of cardiomyocytes by acting on genes that lead to heart failure. This mechanism utilized by Vit D is not always absolutely understood, but the evidence that VDR is expressed on cardiomyocytes suggests the activation of intracellular pathways, causing modified expression of hypertrophy-associated genes, such as myosin heavy-chain isoform, α-tropomyosin, and via the down-regulation of NF-κB (35,39-41). Furthermore, Vit D activation stimulates calcium uptake, thus increasing contractility and improving diastolic contractility (35, 39). Vit D can also decrease extracellular matrix and fibrosis in cardiomyocytes by way of interfering with collagen and metalloproteinase synthesis (35, 39-41).

Atherosclerosis, closely linked with inflammation, affects both the initiation and progression of coronary artery disease. Vit D can prevent coronary artery disease by its positive effects on atherosclerosis, hypertension, and dyslipidemia. These effects are mainly achieved by reducing the expression of IL-1, IL-6, and TNF-α, limiting the formation of macrophage-derived foam cells, and reducing LDL uptake by macrophages, as well as by left ventricular remodeling (39-41). There is an association between low Vit D levels and an increased risk of acute myocardial infarction, coronary heart disease, angina pectoris, and stroke (39-40).

Strong epidemiological proof links Vit D deficiency to the elevated risk of cerebrovascular diseases, including ischemic stroke (41-43). Vit D deficiency is common in individuals who have suffered a stroke, which is generally associated with superior age, restrained mobility, reduced daylight exposure, and malnutrition. About 85% of strokes result from a clot formed in a cerebral artery in which a dysfunctional endothelium would be typically present (42,43). Low Vit D levels contribute to about 50% increased risk of incident stroke (43). There is also evidence that high serum levels of Vit D are associated with much less cognitive impairment among stroke patients (42). Furthermore,

there is evidence that sufficient levels of dietary Vit D ought to exert numerous neuroprotective actions, consisting of a reduction in oxidative stress, a decrease in neuronal inflammation and, eventually, dying from stroke (41,43). The direct effects of Vit D deficiency in increasing the risk of stroke are increased platelet aggregation, increased tissue factor expression, decreased antithrombin and thrombomodulin expression, impaired synthesis of neurotrophic factors and neurotransmitters, and blocked detoxification pathways of the brain. In addition, Vit D deficiency is linked to hypertension and atherosclerosis, which are the major modifiable risk factors for cerebral ischemia (41-43).

Studies have shown that cardiovascular diseases, heart failure, and hypertension are associated with Vit D deficiency (39-43). Despite overwhelming evidence to date, most clinical trials have failed to demonstrate benefits of Vit D supplementation in these diseases (3). This inconsistency highlights the need for greater knowledge and understanding of vitamin D metabolism and cardiovascular effects to determine which patients may benefit from vitamin D supplementation (39).

5. The Anti-Inflammatory Roles of Vitamin D in Metabolic Diseases

Metabolic syndrome, characterized by a cluster of conditions including obesity, insulin resistance, and hypertension, has also been associated with low Vit D levels. Inflammatory processes play a central role in the pathophysiology of metabolic syndrome, and Vit D's ability to modulate these processes has been explored in several studies (8,9,11,44-49). Research has indicated that Vit D can improve insulin sensitivity and reduce inflammation in adipose tissue, suggesting a potential role in the prevention and management of metabolic disorders (9,44,45,47-49). Defects in pancreatic β-cell function, decreased insulin sensitivity, and systemic inflammation are frequently present at the onset of glucose intolerance and type 2 diabetes mellitus (T2DM) (44-46). Vit D exerts its effects by binding of its circulating active form to the β-cell VDR or by the formation of its active form by 1-α-hydroxylase enzyme within the β-cell (46). The binding of Vit D with pancreatic VDR activates the genomic pathway in the insulin gene promoter region, leading to the stimulation of insulin synthesis [**8**]. The indirect effects of Vit D may be its role in the regulation of extracellular calcium and calcium flux through the pancreatic β-cells. Insulin secretion is a calcium-dependent process, and a lack of Vit D or insufficient calcium intake can change the balance between the calcium pools in the extracellular and intracellular cells. This can disrupt the normal release of insulin, especially in response to a high glucose load (46).

Vit D deficiency results in reduced levels of calcitriol to bind to VDR located on pancreatic β-cells, which impairs the insulin signaling pathway. Peroxisome proliferator-activated receptor delta (PPAR-δ) is deactivated as a result of this. PPAR-δ is a transcription factor that plays a pivotal role in the mobilization and breakdown of free fatty acids (FFAs) in both muscle and adipose tissue and prevents insulin resistance induced by FFAs (11,46). As a result of the deactivation of PPAR-δ, the expression of insulin receptors (IRs) on the surface of these cells is decreased. Consequently, the liver, skeletal muscles, and adipose tissue are less able to absorb glucose. This leads to chronic hyperglycemia, which increases the production of reactive oxygen species (ROS) and causes oxidative stress (8,47). Abnormal glucose metabolism and the development of insulin resistance are also linked to subclinical inflammation (44,45,48,49). Vit D's anti-inflammatory effects in metabolic diseases are again achieved by reducing the pro-inflammatory cytokines, such as TNF-α, IL-6, interferon-gamma, and IL-1β, and increasing the anti-inflammatory cytokines like IL-10 and IL-8 (8-10, 46). Likewise, Vit D has been shown to inhibit the NF-κB and MAPK pathways. thereby reducing the expression of pro-inflammatory genes in metabolic diseases (8-10, 46, 47).

Adipose cells are triggered to release a variety of pro-inflammatory cytokines that directly impede insulin signaling by certain stimuli, such as overeating and obesity. These adipo-cytokines show their effects by NFκB and the c-Jun NH2-terminal kinase (JNK)/AP-1 signaling pathways. Insulin signaling is disrupted and the expression of genes that are responsible for multiple inflammatory cytokines is impacted by the corruption of these signaling pathways (11). Ding et al. investigated the effects of Vit D on signaling pathways and macrophage-mediated inflammation in cultured human adipocytes. The expression of the NFκB inhibitor kB-α (IkB-α) protein was significantly inhibited in MC (macrophage-conditioned) medium, which contained 25% adipocyte medium, and the levels of NFκB were elevated. IkB-α expression went up and NFκB phosphorylation went down when calcitriol was added to the medium. As a result, NFκB signaling activation induced by macrophages was inhibited (10).

T2DM and its complications are both caused and exacerbated by oxidative stress. High glucose concentrations activate reactive oxygen species (ROS) and NFκB pathways, and the inflammatory cytokines monocyte chemotactic protein-1 (MCP-1) and leukocyte interleukin-8 (IL-8) are secreted in response to this. Diabetes progression is sped up by elevated MCP-1 and IL-8 levels in the blood (10,46). Serum ferritin levels are typically significantly elevated in T2DM patients, and individuals with elevated ferritin levels are more likely to develop T2DM. Excessive iron intake, particularly heme iron from red meat, causes oxidative damage to β-cells and impairs the suppression of hepatic glucose production. These effects of iron increase the risk of T2DM [**8**]. Divalent metal transporter 1 (DMT1) was thought to facilitate iron uptake in pancreatic cells, and NFκB activity controls DMT1 expression. By reducing the NFκB-DMT1 pathway, Vit D prevents iron accumulation in β-cells and improves islet morphology and β-cell function. By down-regulating phosphorylated p38 MAPK and phosphorylated ERK1/2, which are the conventional MAPKs, Vit D can also reduce MAPK signaling. A positive regulatory role for the ERK1/2 signaling module in glucose-stimulated insulin secretion in pancreatic β-cells was suggested by a number of studies (8,10,46,47).

6. The Anti-Inflammatory Roles of Vitamin D in Miscellaneous Diseases

Vit D deficiency is linked to a wide range of neuropsychiatric disorders and neurodegenerative diseases, according to epidemiological evidence (15). Vit D deficiencies in adulthood have been linked to a variety of negative brain outcomes, including Parkinson's disease (PD), Alzheimer's disease, depression, and cognitive decline, whereas Vit D deficiencies early in life have been linked to neuropsychiatric disorders like schizophrenia. According to a number of animal and clinical studies (15,23,27,28,29,31), Vit D supplementation may have some "neuroprotective" effects for epilepsy, multiple sclerosis, PD, and chronic stress. A significant factor in the development of schizophrenia is Vit D deficiency during pregnancy. The VDR is found in areas of concern in schizophrenia (such as dopaminergic regions) and influences brain growth during fetal development (15,50). Dopamine metabolism changes in Vit D deficiency, which may be a reflection of the characteristic decline in dopamine neuron expression found in schizophrenia (15).

Depression develops as a consequence of an alteration in neural activity, which involves the elevation in "glutamate", which is an "excitatory neurotransmitter", and the inhibition of "Gamma-Aminobutyric Acid (GABA)", which is an "inhibitory neurotransmitter". When GABA binds to GABA receptors, it has a calming and soothing effect (51,52). On the other hand, its inhibition can cause stress, anxiety, and depression. This is due to the increased intracellular calcium levels in the inhibitory neurons, which cause neuronal apoptosis and necrosis. Vit D regulates calcium homeostasis in neurons. By maintaining calcium homeostasis and stimulating tryptophan, Vit D regulates serotonin levels, which are involved in controlling our mood and prevent depression (4,15).

Maternal/neonatal Vit D deficiency has been proposed as a possible environmental risk factor for autism spectrum disorders due to its involvement in early neurodevelopment, the immune system, and gene regulation processes. Individuals with autism have immune function defects such as elevated levels of inflammatory cytokines and ongoing inflammation in their brains, similar to those affected by Vit D deficiency (4). Vit D activates the transcription of the serotonin-synthesizing gene tryptophan hydroxylase 2 in the brain and represses the transcription of tryptophan hydroxylase 1 in tissues outside the blood–brain barrier. This mechanism explains the low concentrations of serotonin in the brain and its elevated concentrations in tissues outside the blood–brain barrier in autism (53).

Vit D's inhibition of malignant cell proliferation and enhancement of normal cell differentiation contribute to cancer prevention. Vit D also functions as an "antioxidant", plays a great role in "immunity", and lowers the risk of cancer (1,3,4,14). But this highly depends on the blood calcitriol levels. According to one study, a 92.5 nmol/L serum concentration of calcitriol reduces the likelihood of colorectal cancer by 50% compared to those with a <15 nmol/L concentration of calcitriol in the blood (54). An inverse relation between serum Vit D levels and stomach cancer has also been demonstrated (55). One study also indicates that serum concentrations of calcitriol of about 52 ng/mL reduce the risk of breast cancer development by 50% (56).

The idea that Vit D and gastrointestinal malabsorptive conditions like celiac disease have a bilateral relationship is strengthened by the discovery that VDRs are highly expressed in intestinal epithelial cells and all cell populations of the intestinal wall. Vit D is now considered a factor that influences the pathogenesis of celiac disease in all of its various factors, as well as the disease's outcome (57). The Vit D activating enzyme 1-α-hydroxylase (CYP27B1) is expressed by cells in the intestine, pancreas, prostate, and immune system, in addition to those involved in bone and mineral metabolism (1,14,15,16,17,58). Many of these epithelia also exhibit elevated CYP27b1 expression in the early stages of cancer. This suggests that Vit D has a greater impact on human health than previously thought (58). The extra-renal synthesis of calcitriol by immune cells and peripheral tissues has been proposed to have immunomodulatory properties similar to locally active cytokines (58). Vit D deficiency appears to play a significant role in both acute and chronic pancreatitis, according to recent research. These studies demonstrated that Vit D deficiency is associated with pancreatitis by its anti-inflammatory and anti-fibrotic effects upon binding to VDRs (59).

7. Conclusions

In conclusion, the anti-inflammatory roles of Vit D represent a promising area of research with significant implications for human health. The evidence supporting the association between Vit D status and various inflammatory conditions is compelling, suggesting that maintaining adequate Vit D levels may be crucial for preventing and managing diseases characterized by chronic inflammation (8-15). The anti-inflammatory effects of Vit D play a role in many diseases including autoimmune diseases, neurodegenerative diseases, cardiovascular diseases, metabolic diseases, and cancer. Although Vit D functions with different anti-inflammatory mechanisms in each of these diseases, there are some mechanisms of action that are common to all.

Future research should focus on elucidating the precise mechanisms by which Vit D exerts its anti-inflammatory effects, as well as conducting well-designed clinical trials to establish optimal dosing strategies and treatment protocols. Moreover, public health initiatives aimed at increasing Vit D awareness and supplementation could play a vital role in improving overall health outcomes and reducing the burden of inflammatory diseases in the population.

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VITAMIN D INTOXICATION: CASE REPORT

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Abstract

Hypervitaminosis D is a rarely reported condition. In general it is only perceived when hypercalcemia is not resolved. The use of vitamin D has increased in recent years because of its benefits, but as a result, intoxication cases have occurred more frequently. This report describes a patient who presented worsening of renal function and hypercalcemia. After investigation, vitamin D intoxication was confirmed and it was due to an error in compounding.

Keywords: Vitamin D/poisoning, Hypercalcemia, Case reports.

Introduction

Clinical conditions associated to vitamin D intoxication have been scarcely reported since hypercalcemia suggests other presumptive diagnoses (1). The number of cases has recently increased because of more prescriptions of vitamin D to treat hypovitaminosis D. There are few of these products traded by the pharmaceutical industries, leading to increased demand for compounded medications, which may lead to compounding errors, such as the case herein reported. The patient developed hypercalcemia and worsening of renal failure due to ingestion of a dose 2,000-fold higher than what was prescribed.

Case report

A 53-year old male patient, with history *diabetes mellitus*, hypertension, non-dialysis chronic renal failure and smoking. He was admitted to hospital in September 2011 to investigate worsening of the renal function, pruritus, muscle weakness, lack of appetite and weight lost. Table 1 displays the results of the biochemical tests before hospitalization.

Table 1. Biochemical tests before hospitalization.

Month/year	Calcium (8.4-10.4) mg/dL	Ionized calcium (1.14-1.31) mmol/L	Parathyroid hormone (12.0-65.0) pg/mL	Creatinine (0.6-1.2) mg/dL
March/2011	9.0	–	–	1.30
July/2011	14.7	–	–	3.71
August/2011	–	2.11	18.0	3.84
September/2011	13.4	–	–	4.67

On the initial physical examination, the following were measured: weight 86kg, height 1.93cm, blood pressure 140x70mmHg and heart rate 80bpm. The biochemical test results were creatinine 67mg/dL, calcium 13.4mg/dL, ionized calcium 1.88mmol/L, parathyroid hormone (PTH) 15.3pg/mL. The ultrasound showed renal calculi, one was obstructing and the urinary tract was dilated. He was operated on for double-J catheter implanting and ureterolithotripsy. A 3-cm-long colon neoplasm was observed in colonoscopy. Parathyroid scintigraphy, myelogram and positron- emission tomography (PET) scan presented normal results.

The following management was prescribed: hyperhydration; administration of furosemide, corticosteroid and iron; and replacing erythropoietin by methoxy polyethylene glycol-epoetin beta due to suspected skin allergy. Intranasal and subcutaneous calcitonin was also introduced.

Hypercalcemia persisted even after exeresis of colorectal adenocarcinoma. Investigating parathyroid adenoma by ultrasound, scintigraphy and biopsy ruled out primary hyperparathyroidism. Biochemical test results were creatinine 2.69mg/dL, calcium 13.0mg/dL, ionized calcium 1.67mmol/L, PTH 17.5pg/mL, vitamin D >100ng/mL.

The laboratory tests for bone metabolism were inconclusive, and PTH inappropriately persisted with "normal" levels even with hypercalcemia. The laboratory diagnosis was probably influenced by renal failure or possible vitamin D intoxication, considering the patient took the vitamin for some months before admission to hospital, at 2,000IU per day. Since hypervitaminosis was suspected, renal function, as well as serum calcium and vitamin D levels were monitored, and ibandronate sodium was introduced and later replaced by cinacalcet.

The drug capsules were submitted to laboratory analysis due to suspected intoxication. The analytical methodology and specification used were based on the United States Pharmacopea (USP 34) Oil-soluble vitamins capsules, by means of high-performance liquid chromatography. The amount of vitamin D found was two-thousand-fold higher than expected for each capsule.

As shown in table 2, the laboratory results dropped and vitamin D levels decreased slowly as expected, because of its elimination profile (1,2).

Table 2. Biochemical tests after discharge from hospital.

Month/year	Calcium (8.4-10.4) mg/dL	Ionized calcium (1.14-1.31) mmol/L	Parathyroid hormone (12.0-65.0) pg/mL	Creatinine (0.6-1.2) mg/dL	25(OH)D (30-100) ng/mL
January/2012	12.0	1.63		2.48	226
February/2012	10.7	1.51		2.40	196
March/2012	10.0	1.37	25.2	3.50	70
June/2012		1.49		2.40	

Discussion

Vitamin D supplementation has currently been more often used for increasing calcium absorption in the body and reducing the risk of diseases, such as rickets and osteoporosis. Some recent studies have shown that vitamin D deficiency is associated to an increased risk of developing cardiovascular diseases, some types of cancer, in addition to inflammatory and autoimmune diseases (3-5). The body can produce vitamin D only after sunlight exposure. When regular sunlight exposure is not frequent, only foods are not enough to keep appropriate levels of the vitamin. Hence supplementation with medications is necessary. The recommended dose varies from 800 to 4,000IU per day according to age (5,6).

Vitamin D supplements can be easily purchased over the counter, in the form of ergocalciferol or cholecalciferol, in diverse formulations and dosages. The cases of hypervitaminosis D usually occur in excessive supplementation (3,7,8). The upper limit of daily vitamin D intake needed to cause toxicity is unknown; however, up to 10,000IU per day was considered safe in a healthy population (3).

The estimated toxic dose of vitamin D should be greater than 100,000IU per day for, at least, one month (9). In the present case, the dose used was 40-fold higher than that recommended. There are reports of clinical conditions in which the amount was 8- and 18-fold the maximum recommended dose (9). The initial tests showed increased calcium levels and undetectable PTH. Later the intoxication was confirmed since the serum vitamin D level was over 1,000ng/mL. In another report, a patient was diagnosed as acute renal failure secondary to hypercalcemia, and had normal PTH and increased vitamin D levels (3). Investigating the medications the patient was taking, it was observed that the vitamin D3 vial contained 50,000IU per capsule instead of 1,000IU. Moreover, to aggravate the situation, the patient took two more supplements containing vitamin D3; thus, he was taking approximately 50,400IU per day.

The diagnosis of vitamin D intoxication is not common in cases of hypercalcemia, and it was less often made before availability of the vitamin for supplementation. This condition is likely to be associated to primary hyperparathyroidism, multiple myeloma or other neoplasms. The patient reported was paradoxical because in case of hypercalcemia, PTH levels would tend to be low or, in typical hyperparathyroidism, they would be high. However, the patient's PTH levels were normal and hindered diagnosis; hence it was necessary to investigate all possible causes of hypercalcemia.

The patient took a compounded cholecalciferol supplement. Overdose was found by laboratory analysis of the capsules that contained 4,000,000IU instead of 2,000IU per capsule. This kind of compounding error may occur mainly when dealing with very-low dose products; in such cases, the pure input is not weighed, it is just diluted. Vitamin D is particularly produced at a high potency – 1mg is equal to 40,000IU. Therefore, the pharmacist must take care as required to perform correct dilution, weighing and conversion procedures. The compounding pharmacies should encourage good practices, establish quality criteria and strictly supervise all stages of the production process. The pharmacy seriously failed and was notified as a preventive measure to avoid new events

Conclusion

Vitamin D supplementation should be appropriately monitored due to potential risk of intoxication, especially when made by compounding.

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СТРАТЕГИИ ПРЕОДОЛЕНИЯ ОРГАНИЗАЦИОННОГО СОПРОТИВЛЕНИЯ ИЗМЕНЕНИЯМ ПРИ ВНЕДРЕНИИ МЕДИЦИНСКИХ ТЕХНОЛОГИЙ: АНАЛИТИЧЕСКИЙ ОБЗОР ПОДХОДОВ И МЕЖДУНАРОДНОГО ОПЫТА

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STRATEGIES FOR OVERCOMING ORGANISATIONAL RESISTANCE TO CHANGE IN THE IMPLEMENTATION OF MEDICAL TECHNOLOGIES: AN ANALYTICAL REVIEW OF APPROACHES AND INTERNATIONAL EXPERIENCE

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Аннотация

Статья посвящена аналитическому обзору подходов к преодолению организационного сопротивления изменениям при внедрении медицинских технологий в медицинских учреждениях. Рассматриваются теоретические основания сопротивления изменениям, его основные причины в сфере здравоохранения, а также международные подходы к управленческому сопровождению технологических изменений. Особое внимание уделяется вопросам организационной готовности, коммуникации целей изменений, вовлечения сотрудников, обучения, поэтапного внедрения и мониторинга результатов. Также раскрывается значение международного опыта для медицинских учреждений Республики Казахстан в условиях технологического и цифрового развития здравоохранения.

Abstract

The article provides an analytical review of approaches to overcoming organisational resistance to change in the implementation of medical technologies in healthcare institutions. It examines the theoretical foundations of resistance to change, its main causes in healthcare, and international approaches to management support for technological change. Attention is paid to organisational readiness, communication of change objectives, staff involvement, training, phased implementation, and monitoring of results. The article also discusses the relevance of international experience for healthcare institutions in the Republic of Kazakhstan in the context of technological and digital development of healthcare.

Ключевые слова: медицинские технологии, организационное сопротивление, управление изменениями, здравоохранение, медицинские учреждения, организационная готовность, Казахстан.

Keywords: medical technologies, organizational resistance, change management, healthcare, healthcare institutions, organizational readiness, Kazakhstan.

1. Введение

Внедрение медицинских технологий является одним из ключевых направлений развития современного здравоохранения. Новые диагностические, лечебные, цифровые и организационно-технологические решения позволяют повысить качество медицинской помощи, улучшить маршрутизацию пациентов, ускорить принятие клинических решений и повысить эффективность работы медицинских учреждений. Вместе с тем технологическое обновление требует не только приобретения оборудования или запуска цифровых инструментов, но и изменения рабочих процессов, профессиональных практик и управленческих механизмов.

Одним из наиболее значимых факторов, влияющих на результативность внедрения медицинских технологий, выступает организационное сопротивление изменениям. Оно может проявляться в настороженности персонала, снижении вовлечённости, формальном использовании новых решений, несогласованности действий подразделений, недостаточном понимании целей изменений и опасениях, связанных с ростом нагрузки или изменением зон ответственности. В медицинских учреждениях сопротивление имеет особую значимость, поскольку изменения затрагивают клиническую безопасность, профессиональную автономию врачей, взаимодействие между специалистами и качество медицинской помощи.

Международная практика показывает, что преодоление сопротивления изменениям требует системного управленческого сопровождения. Значение имеют не только техническая готовность учреждения, но и лидерство руководителей, коммуникация целей внедрения, участие персонала, обучение, адаптация регламентов, поэтапное внедрение и оценка результатов. Поэтому стратегии преодоления сопротивления должны рассматриваться как часть управления изменениями при внедрении медицинских технологий.

Для медицинских учреждений Республики Казахстан данная проблема является актуальной в условиях технологического и цифрового развития здравоохранения. Эффективность внедрения новых медицинских технологий зависит от того, насколько организации готовы управлять измене-

ниями, вовлекать сотрудников, снижать неопределённость и формировать устойчивую практику применения новых решений.

Целью данной статьи является аналитический обзор подходов и международного опыта преодоления организационного сопротивления изменениям при внедрении медицинских технологий, а также определение их возможного значения для медицинских учреждений Республики Казахстан.

2. Организационное сопротивление изменениям в здравоохранении: теоретический обзор

Организационное сопротивление изменениям является одной из устойчивых проблем управления развитием организаций. В классическом понимании изменение связано с нарушением сложившегося равновесия, поскольку новые цели, технологии, правила и способы взаимодействия требуют пересмотра привычных моделей поведения. К. Левин рассматривал организационное изменение через динамику сил, где одни факторы способствуют переходу к новому состоянию, а другие удерживают систему в прежнем положении [6, с. 5-41]. Такой подход позволяет рассматривать сопротивление не только как отрицательную реакцию персонала, но и как проявление существующих организационных ограничений, профессиональных привычек и устойчивых моделей взаимодействия.

В управленческой литературе сопротивление изменениям связывается с недостаточной готовностью сотрудников к новым требованиям, слабой коммуникацией, отсутствием доверия к руководству, неясностью целей изменений и опасениями потери профессиональной автономии. Дж. Коттер подчёркивал, что успешная трансформация требует создания ощущения необходимости изменений, формирования группы лидеров, выработки понятного видения, коммуникации этого видения и закрепления новых подходов в организационной культуре [5]. Следовательно, сопротивление возникает не только из-за нежелания персонала меняться, но и вследствие недостаточно продуманного управления самим процессом изменений.

В медицинских учреждениях сопротивление изменениям имеет особую специфику. Здравоохранение является профессионально сложной и высоко регламентированной сферой, где новые технологии затрагивают клиническую безопасность, ответственность врачей, взаимодействие подразделений, нагрузку на персонал и доверие пациентов. В отличие от многих других организаций, медицинские учреждения не могут внедрять изменения только с позиции административной эффективности. Любое технологическое обновление должно учитывать клинические риски, профессиональные стандарты, этические требования и необходимость сохранения непрерывности медицинской помощи.

Сопротивление персонала в здравоохранении может быть связано не только с консерватизмом или нежеланием осваивать новые инструменты. Часто оно отражает реальные опасения сотрудников: недостаток времени на обучение, рост объёма документации, неясность новых обязанностей, технические сбои, риск ошибки при использовании новой технологии, отсутствие поддержки со стороны руководства или сомнения в практической пользе внедряемого решения. Поэтому сопротивление следует рассматривать как управленческий сигнал, указывающий на проблемные зоны подготовки и сопровождения изменений.

Важным понятием в анализе сопротивления является готовность к организационным изменениям. А. Арменакис, С. Харрис и К. Моссхолдер связывали готовность к изменениям с убеждениями, установками и намерениями членов организации в отношении необходимости и возможности изменений [1, с. 681-703]. В этом контексте задача руководства состоит не только в снижении сопротивления, но и в формировании уверенности персонала в том, что изменения необходимы, понятны, реалистичны и поддерживаются организацией.

Современный подход также предполагает отказ от упрощённого понимания сопротивления как исключительно отрицательной реакции. С. Пидерит отмечала, что отношение сотрудников к изменениям может быть неоднозначным и включать когнитивные, эмоциональные и поведенческие компоненты [7, с. 783-794]. Это означает, что сотрудник может одновременно понимать необходимость изменений, испытывать тревогу по поводу их последствий и формально участвовать во внедрении. Для медицинских организаций такой подход особенно важен, поскольку внешнее согласие персонала не всегда означает реальное принятие новой технологии.

Таким образом, организационное сопротивление изменениям в здравоохранении следует рассматривать как сложное управленческое явление, связанное с профессиональной средой, организационной культурой, уровнем доверия, качеством коммуникации и готовностью персонала к новым требованиям. Его преодоление требует не только административных решений, но и системной работы с мотивацией, обучением, вовлечением сотрудников и адаптацией внутренних процессов медицинского учреждения.

3. Причины сопротивления и международные подходы к его преодолению

Сопротивление изменениям при внедрении медицинских технологий формируется под влиянием индивидуальных, коммуникационных и организационных факторов. К индивидуальным причинам относятся страх ошибки, недостаток цифровых и профессиональных компетенций, опасение роста нагрузки, неуверенность в собственной способности освоить новую технологию и сомнения в её практической полезности. Для медицинского персонала такие опасения особенно значимы, поскольку применение новой технологии связано не только с изменением рабочих операций, но и с ответственностью за безопасность пациента.

Коммуникационные причины сопротивления связаны с качеством взаимодействия внутри медицинского учреждения. Если цели внедрения технологии недостаточно разъяснены, сотрудники могут воспринимать изменения как административное давление. Сопротивление усиливается, когда пер-

сонал не включён в обсуждение изменений, не получает своевременной обратной связи и не понимает, как новая технология повлияет на распределение функций между врачами, средним медицинским персоналом, администраторами и техническими специалистами. В исследованиях по изменениям в клинической практике подчёркивается, что сопротивление может быть результатом сочетания индивидуальных, межличностных и организационных факторов [2].

Организационные причины сопротивления проявляются в слабой готовности учреждения к внедрению технологии. К ним относятся недостаточная инфраструктура, отсутствие понятных регламентов, технические сбои, нехватка времени на обучение, несогласованность действий подразделений и слабая поддержка со стороны руководства. В медицинских учреждениях эти факторы могут приводить к тому, что новая технология формально внедряется, но фактически используется ограниченно либо воспринимается персоналом как дополнительная нагрузка.

Международные подходы к преодолению сопротивления основаны на понимании внедрения медицинской технологии как процесса организационной адаптации. В модели NASSS, раскрывающей факторы непринятия, отказа от использования, масштабирования, распространения и устойчивости медицинских технологий (Nonadoption, Abandonment, Scale-up, Spread, and Sustainability), Т. Гринхал и соавторы подчёркивают значение нескольких взаимосвязанных элементов: клинической проблемы, характеристик технологии, ценности для пользователей, готовности персонала, организационного контекста, внешней среды и способности системы адаптироваться во времени [4].

[4]. Такой подход позволяет заранее определить возможные источники сопротивления и подготовить управленческие меры до начала масштабного внедрения.

Другой значимый подход представлен в Консолидированной рамке исследований внедрения (Consolidated Framework for Implementation Research, CFIR). В данной модели внимание уделяется характеристикам внедряемого решения, внутренней среде организации, внешнему контексту, особенностям участников изменений и самому процессу внедрения [3]. Для медицинских учреждений это означает необходимость оценивать не только качество технологии, но и готовность подразделений, уровень коммуникации, лидерство, ресурсы и участие сотрудников.

Практические стратегии преодоления сопротивления включают несколько направлений. Первое направление связано с коммуникацией целей изменений. Персонал должен понимать, зачем внедряется технология, какую проблему она решает и какие результаты ожидаются для пациентов, сотрудников и организации. Второе направление связано с обучением и сопровождением. Новая технология должна вводиться вместе с практическими инструкциями, тренингами, консультационной поддержкой и возможностью задавать вопросы в ходе применения.

Третье направление связано с вовлечением персонала. Сопротивление снижается, когда врачи, медицинские сёстры и другие сотрудники участвуют в обсуждении внедрения, тестировании технологии и корректировке рабочих процессов. Участие персонала позволяет выявить практические ограничения, которые не всегда видны на уровне управленческого решения, но существенно влияют на повседневное использование технологии.

Четвёртое направление связано с поэтапным внедрением. Пилотное применение технологии в ограниченном подразделении или процессе позволяет оценить её удобство, выявить технические и организационные проблемы, уточнить регламенты и снизить уровень неопределённости. После этого технология может быть масштабирована с учётом полученного опыта.

Пятое направление связано с мониторингом результатов. Эффективность внедрения должна оцениваться не только по факту запуска технологии, но и по таким параметрам, как принятие персоналом, соответствие рабочим процессам, удобство применения, устойчивость использования и влияние на качество медицинской помощи. В исследованиях внедрения отдельно выделяются такие результаты, как приемлемость, принятие, уместность, осуществимость, качество выполнения, стоимость внедрения, распространение и устойчивость [8].

Таким образом, причины сопротивления медицинским технологиям связаны не только с личным отношением сотрудников, но и с качеством организационной подготовки. Международный опыт показывает, что сопротивление может быть снижено через раннюю диагностику рисков, понятную коммуникацию, обучение, вовлечение персонала, адаптацию процессов, поэтапное внедрение и регулярную оценку результатов. Такой подход позволяет перейти от формального внедрения медицинской технологии к её устойчивому использованию в клинической и организационной практике медицинского учреждения.

4. Значение международного опыта для медицинских учреждений Республики Казахстан

Для медицинских учреждений Республики Казахстан международный опыт преодоления организационного сопротивления изменениям имеет практическое значение, поскольку система здравоохранения находится в процессе технологического и цифрового развития. В Концепции развития здравоохранения Республики Казахстан на 2022-2029 годы обозначены задачи повышения качества медицинской помощи, развития интегрированной модели оказания услуг, цифровизации, укрепления кадрового потенциала и совершенствования управления отраслью [9]. Данные направления создают основу для внедрения новых медицинских технологий, однако их результативность зависит от готовности медицинских организаций управлять изменениями.

Главный вывод из международного опыта состоит в том, что сопротивление персонала не следует рассматривать только как препятствие. В медицинских учреждениях оно может указывать на

недостаточную подготовку процессов, слабую коммуникацию, нехватку обучения, неясность распределения ответственности или несоответствие технологии реальным условиям работы. Поэтому для казахстанских медицинских организаций важно заранее выявлять возможные источники сопротивления и использовать их как основание для корректировки управленческих решений.

Применение международных подходов предполагает, что внедрение медицинских технологий должно начинаться с оценки организационной готовности учреждения. Такая оценка может включать анализ инфраструктуры, кадровых компетенций, цифровых навыков, внутренних регламентов, готовности руководителей подразделений и отношения персонала к предстоящим изменениям, что особенно важно для медицинских организаций, где новые технологии затрагивают не только технические операции, но и клиническую ответственность, маршрутизацию пациентов и взаимодействие между подразделениями.

Особое значение имеет коммуникация целей изменений и вовлечение персонала. Руководству медицинского учреждения необходимо объяснять, какую проблему решает новая технология, какие результаты ожидаются и какая поддержка будет предоставлена сотрудникам. Врачи, медицинские сёстры, административные работники и технические специалисты должны восприниматься не только как исполнители изменений, но и как участники их подготовки. Такой подход позволяет снизить неопределённость и повысить практическую применимость внедряемых решений.

Международный опыт также показывает важность поэтапного внедрения. Для казахстанских медицинских учреждений целесообразно применять пилотный подход, при котором новая технология сначала тестируется в ограниченном процессе или подразделении, что позволяет выявить технические, кадровые и организационные ограничения, уточнить регламенты, обучить персонал и только после этого переходить к более широкому применению.

Таким образом, международный опыт может быть использован в Казахстане как основа для формирования более зрелого подхода к управлению изменениями в медицинских учреждениях. Его значение состоит не в прямом копировании зарубежных моделей, а в применении принципов, которые позволяют снижать сопротивление персонала, повышать готовность организаций и обеспечивать устойчивое использование медицинских технологий в клинической и управленческой практике.

5. Заключение

Организационное сопротивление изменениям является значимым фактором, влияющим на результативность внедрения медицинских технологий в медицинских учреждениях. Оно связано не только с личным отношением сотрудников к новым решениям, но и с качеством управленческой подготовки, уровнем коммуникации, наличием обучения, понятностью распределения ответственности и соответствием технологии реальным условиям клинической практики.

Проведённый аналитический обзор показывает, что преодоление сопротивления требует системного подхода. Наиболее значимыми направлениями являются предварительная оценка организационной готовности, разъяснение целей изменений, вовлечение персонала, обучение сотрудников, поэтапное внедрение технологий, адаптация внутренних регламентов и мониторинг результатов. В таком случае сопротивление может рассматриваться не только как препятствие, но и как источник информации о слабых местах внедрения.

Результаты обзора позволяют сделать вывод, что успешное внедрение медицинских технологий зависит от способности медицинского учреждения соединить техническую модернизацию с управлением организационными изменениями. Для Республики Казахстан данный подход имеет особое значение в условиях цифрового и технологического развития здравоохранения. Использование международных принципов может способствовать снижению сопротивления персонала, повышению готовности медицинских организаций и более устойчивому применению новых медицинских технологий.

Таким образом, стратегии преодоления организационного сопротивления должны рассматриваться как обязательный элемент управления изменениями в здравоохранении. Их применение позволяет повысить эффективность внедрения медицинских технологий, укрепить доверие персонала к изменениям и обеспечить интеграцию новых решений в клинические и управленческие процессы медицинских учреждений.

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PEDAGOGICAL SCIENCES

FORMATION OF REFLEXIVE SKILLS IN TEACHER TRAINING

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Abstract
The article examines the theoretical and practical importance of the formation of reflexive skills in teacher training. Reflexive activity plays an important role in the analysis, evaluation and development of a teacher's own professional activity. During the study, the positive impact of developing reflective thinking skills of future teachers on the quality of pedagogical activity was determined. Also, the ways of applying reflection methods in teacher training and their role in the pedagogical process were explained. Reflexive activity allows the teacher to identify his strengths and weaknesses, make pedagogical decisions in accordance with the individual characteristics of students, and make the learning process person-oriented.
Keywords: reflection, teacher training, reflexive activity, pedagogical skills, education.

Reflective portfolios are an important tool in teacher training because they allow students to document the problems they encounter in the teaching process, analyze their experiences, and use the results they obtain as a basis for future action. This process not only develops teachers' critical thinking skills, but also supports them in making creative pedagogical decisions and solving situational problems. One of the theoretical foundations of reflective practice was put forward by Donald Schön (1983). Schön describes reflection as an integral and important component of professional activity, and at the same time understands it as "the professional reflective person evaluates and reinterprets his or her activity by considering the sequence of his or her experience." This approach shows that reflective activity is not only a tool for analysis for a teacher, but also a key resource in the formation and implementation of professional decisions. Schön's theory serves as a theoretical basis for planning teacher development strategies in modern pedagogical practice[4].

In addition, scientific research conducted in recent years has shown that reflective activity directly affects the development of teachers' professional skills. Research has shown that reflective thinking allows teachers to effectively prepare lesson plans, select teaching methods according to the situation, and increase students' learning achievements [3]. Reflective skills allow teachers not only to evaluate what is happening in the lesson, but also to plan the future teaching process on a more purposeful and scientific basis.

At the same time, reflective activity creates conditions for the teacher to systematically record, analyze, and draw conclusions from their own experience. Using a reflective approach, teachers identify failures and problems they encounter in the teaching process, try alternative solutions, and enrich their experience for future activities. This approach serves both the teacher's self-development and the improvement of the quality of the teaching process in the educational institution.

The modern education system requires the teacher not only to be a person who transmits knowledge, but also to act as a professional who constantly evaluates, analyzes, and develops his or her own activities. In this regard, reflective skills are considered one of the main components of teacher training. Reflection is an important tool for a teacher to critically approach his/her own activities, identify successes and shortcomings, and improve his/her future activities.

Globalization and the development of innovative technologies have necessitated the introduction of new approaches in the education system. These changes require teachers to have creative thinking, problem-solving, and self-analysis skills. The formation of reflective skills of future teachers ensures their professional development and increases the quality of teaching.

Reflective activity helps a teacher to objectively evaluate his/her own pedagogical activities, identify problems that arise in the learning process, and find ways to solve them. Therefore, the development of reflective skills in higher pedagogical education institutions is of particular importance.

Thus, reflective activity serves not only as a key mechanism for the teacher's personal development, but also as a key mechanism for strategic decision-making and increasing pedagogical efficiency in the educational process. Modern pedagogical research shows that the formation of reflective skills in teacher training strengthens the integration of theoretical knowledge into practice, encourages teachers to think creatively and analytically in their professional activities, and ultimately leads to an increase in the educational achievements of learners [3;5].

Reflective skills act as a key tool in the formation of an effective connection between knowledge and practice in teacher training. These skills allow a teacher to apply not only theoretical knowledge not only to imitate, but also to apply them in practice, thus making pedagogical decision-making and teaching process management more purposeful and effective.

In particular, reflective skills provide the teacher with the following opportunities:

1. Improving pedagogical decision-making: The teacher critically evaluates the decisions made and the methods applied during the lesson through a reflective approach. This evaluation process is not limited to detecting errors, but also serves to further develop and optimize the application of successful strategies in the

teaching process. As a result, teachers become more creative, flexible and adaptive in the teaching process.

2. Personality-oriented pedagogical approach: Reflective skills allow the teacher to adapt lesson plans and management strategies to the individual characteristics of students. By thinking reflexively, the teacher takes into account the knowledge level, motivation and learning style of students, thus teaching activities are carried out in accordance with both individual and collective goals. This approach not only increases the quality of education, but also strengthens teacher-student relationships.

3. Continuous professional development: Reflective activity allows the teacher to analyze situations that arise in the teaching process and plan his future activities more purposefully. Based on experience, the teacher identifies his strengths and weaknesses, analyzes the difficulties he encounters, and develops strategies to overcome them. This approach, in addition to ensuring the professional development of the teacher, also brings continuous innovation and improvement to his pedagogical activity [3].

International studies show that the attention paid to reflective activity during the internship strengthens the effective integration of theoretical knowledge into practice in teacher training. For example, as emphasized in the scientific articles entitled “Reflection in Teacher Education”, studies conducted on students’ reflective portfolios have shown that their reflective levels increase over time, that they think deeply, and that they systematically evaluate their pedagogical experience [2].

Thus, the development of reflective skills is of strategic importance in teacher training in terms of both strengthening theoretical knowledge and forming practical skills. Reflective activity encourages teachers to think more objectively, evaluate the teaching process, and plan their future activities purposefully. This, in turn, has a direct impact on improving the quality of education and the continuous development of the teaching profession.

Reflective activity is multifaceted and makes significant contributions to the professional development of teachers in various aspects. This activity is not limited to the acquisition of knowledge, but also serves to form the teacher's experience-based decision-making skills, critical thinking and continuous professional development.

1. Self-analysis: One of the main components of reflective activity is the systematic analysis of the teacher's own experience. This process allows the teacher to identify his strengths and weaknesses, assess his professional skills and make plans for future activities. Through self-analysis, the teacher evaluates the results achieved in the teaching process, examines the effectiveness of the methods used in the lesson and develops strategies appropriate to the situations arising in practice. This approach directly affects not only the teacher's self-development, but also the quality of the teaching process. [2].

2. Critical thinking: Reflective activity allows the teacher to objectively and analytically assess the difficulties, problems and unexpected situations encountered in the teaching process. This allows the teacher not only to identify problems, but also to develop alternative solutions. Critical thinking involves the teacher in the decision-making process appropriate to the situation and helps to adjust lesson plans to the individual needs of students. At the same time, the teacher evaluates the shortcomings and successes that arise during teaching and builds his pedagogical activity in a more purposeful and strategic way. [4].

3. Professional development: Reflective thinking acts as a mechanism that ensures the continuous professional development of the teacher. By reflexively analyzing his experience, the teacher prepares plans for future activities, tries out new pedagogical strategies and improves his methodological skills. Reflective activity also allows the teacher to update teaching practices, organize the learning process more efficiently and apply innovative approaches in education. This serves to form the teacher's professional identity and continuously optimize his activities.

Thus, these three main aspects of reflective practice—self-analysis, critical thinking, and professional development—interact with each other in teacher preparation. has an impact. The teacher is not only satisfied with possessing theoretical knowledge, but also learns to apply this knowledge in practice, analyze the teaching process and develop his/her own activities. This approach significantly increases both the teacher's professional skills and the quality of teaching. [2;3].

Various organizational and practical measures are being implemented in the field of teacher education in Azerbaijan to develop reflexive activity. These measures do not limit teachers to acquiring only theoretical knowledge, but also create conditions for them to systematically analyze and improve their professional experience. For example, seminars and webinars held within the framework of the “Reflexive Teacher” project implemented by the Institute of Education are important platforms aimed at developing teachers' reflexive activity.

In these trainings, teachers analyze their lesson plans, the pedagogical methods they use and the assessment criteria through reflexive questions. The analysis process is not limited to assessing the current situation; teachers also identify the difficulties that arise in the teaching process, consider alternative solutions and plan their future activities more purposefully. Thus, reflective questions enable teachers to develop an analytical and creative view of the teaching process.

At the same time, these workshops improve teachers’ skills in approaching the lesson from different pedagogical perspectives. Teachers learn to evaluate the teaching process not only from one side, but also from the perspective of the individual needs of students and the strategic goals of teaching. This develops their critical and creative thinking skills in the pedagogical decision-making process.

This promotion of reflective activity allows teachers to document and systematically analyze their practical experience. Teachers use the results obtained within the framework of seminars and webinars in the preparation of future lesson plans, record the lessons learned in their portfolios, and continuously optimize their pedagogical activity. As a result, reflective activ-

ity not only ensures the personal professional development of teachers, but also serves to improve the quality of teaching and the application of innovative methods in the educational process.

This approach also strengthens teachers' skills in creative decision-making and situational problem-solving in the educational environment. Teachers analyze various pedagogical scenarios through seminars and webinars, discuss their experiences with other colleagues, and ultimately make reflective thinking an integral part of practical activity. Thus, the promotion of reflective activity in the Azerbaijani teacher education system directly contributes to both the development of teachers' professional skills and the improvement of students' learning achievements.

Reflective portfolios act as an integral component of teacher training and provide students with the opportunity to analyze their experiences systematically and in writing. Portfolios do not only serve the purpose of documenting teaching activities; they enable teachers to reflexively evaluate their own activities, identify successes and challenges. This process is critical for teachers to review practical experience and develop strategies for future activities.

The application of reflective portfolios helps teachers integrate theoretical knowledge into practice. Through the portfolio, teachers analyze the pedagogical methods used in each lesson, students' learning outcomes, and assessment criteria. This allows the teacher not only to improve his/her lesson plan, but also to objectively and structuredly assess the problems he/she encounters in the teaching process. Thus, portfolios act as a fundamental tool for both teacher self-development and pedagogical decision-making.

Portfolios also reflect the social and professional aspects of reflection. By sharing the experiences recorded in the portfolio with colleagues in both individual analysis and professional settings, the teacher enriches the pedagogical experience and contributes to the formation of a collective reflective environment. This approach shows that reflective activity is not only important for the personal development of the teacher, but also in terms of systematizing professional experience, sharing pedagogical experience and improving the quality of the educational environment.

In addition, reflective portfolios help to develop teachers' critical thinking and analytical skills. While systematically recording teaching experience, the teacher analyzes the cause-effect relationships of his/her decisions, evaluates alternative strategies and creates a basis for new approaches to be applied in future lessons. This process allows the teacher to integrate professional reflection into daily practice, and as a result, the teacher ensures the transformation of theoretical knowledge into practice in teacher training [2;4].

Thus, reflective portfolios play a role of a bridge between practice and theoretical knowledge in teacher training, allowing the teacher to objectively evaluate his/her own performance, develop continuous development strategies and improve pedagogical decision-making. This approach significantly increases both the professional skills of the teacher and the quality of teaching and emphasizes the role of reflective activity in both the personal and professional environment.

Reflective activity is considered a key and integral component of continuous professional development in the field of education. This process gives the teacher not only the ability to apply theoretical knowledge, but also the opportunity to systematically and critically evaluate his/her own practical activity, draw lessons from the results obtained and plan his/her future activity in a more purposeful and strategic way. Thus, reflective activity strengthens the teacher's professional decision-making process, ensures the evaluation of his/her performance from the prism of critical thinking and supports the formation of a professional personality [4].

Modern research shows that teachers involved in reflective practice approach the teaching process with a broader and more multifaceted pedagogical perspective. They conduct assessments not only by considering specific problems that arise during the lesson, but also by considering the individual needs of students, learning styles, and the dynamics of the learning environment. Such teachers objectively analyze the lesson process, identify successes and weaknesses, and ultimately develop strategic plans and pedagogical interventions to improve learning outcomes [2].

Reflective activity also strengthens teachers' continuous professional learning and development skills. By reflectively evaluating their own experience, the teacher tests new pedagogical methods, optimizes teaching plans, and integrates lessons learned from experience into future activities. This approach directly affects not only the teacher's personal development, but also the quality of teaching and the improvement of students' learning achievements.

At the same time, reflective activity allows teachers to develop critical and analytical thinking skills. The teacher analyzes problems that arise during the lesson, evaluates cause-and-effect relationships, and considers alternative solutions. This allows the teacher to be more purposeful and creative in pedagogical decision-making. As a result, reflexive activity, along with the development of the teacher's professional identity, also increases the skills of situational problem solving, adaptive approach and strategic planning in the teaching process.

Thus, reflexive activity acts as the main support for teacher training and continuous professional development in the field of education. It allows the teacher not only to criticize teaching activities, but also to develop the skills of learning from experience, optimizing pedagogical decisions and purposefully planning their future activities. This not only increases the professional skills and quality of teaching of teachers, but also directly contributes to improving the learning achievements of students [2;4].

The conducted research shows that the formation of reflexive skills in teacher training has a significant impact on the effectiveness of the professional activities of future teachers. Reflection allows teachers to analyze their activities, identify their mistakes and improve the quality of the pedagogical process.

In the modern educational environment, reflexive thinking is considered one of the main indicators of the professional competencies of a teacher. Therefore, the application of methods and tools aimed at the develop-

ment of reflexive activity in higher education institutions is important. Discussions, practical exercises, self-assessment and pedagogical practices in the training process have a positive effect on the formation of reflexive skills.

It can be concluded that the development of reflexive skills increases the quality of teachers' professional training and allows them to achieve successful results in their future activities.

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PHILOLOGICAL SCIENCES

LINGUOCOGNITIVE LIMITATIONS OF TRANSLATION IN THE GERMAN-AZERBAIJANI LANGUAGE PAIR USING AI

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Abstract

The article analyzes the key limitations and systemic errors that arise when using Artificial Intelligence (AI) for machine translation from German into Azerbaijani. Despite significant technological progress, modern neural network systems face fundamental challenges when dealing with language pairs belonging to different cultural and linguistic families. The study explores the concept of "artificial bilingualism", emphasizing that AI, by operating on statistical patterns, is incapable of deep understanding of cultural context - a factor critical for adequate localization. The author examines major lexical-semantic barriers, such as: The ambiguity of words with multiple meanings. The absence of direct equivalents for specific cultural realities. The inability to correctly convey idioms, which often results in literal and nonsensical translations. Using a specific example of a text regarding equine gaits, the article demonstrates the AI's tendency toward "hallucinations" - the addition of information not present in the source text, which violates the core principle of fidelity to the original. The author concludes that the future of high-quality translation lies not in the replacement of humans by machines, but in their synergy. AI serves as a powerful tool for generating rough drafts, while the professional translator performs the indispensable work of post-editing, cultural adaptation, and ensuring the semantic accuracy of the final text.

Keywords: Artificial intelligence, Human activity, Foreign words, Loanwords Artificial bilingualism, Linguistic environment, Language environment, Native speech, Mother tongue.

In today's world of translation, machine translation systems may not always account for all cultural nuances, which can lead to interpretation errors or even misunderstandings. Localization requires not only accurate translation but also a thorough understanding of cultural contexts, which AI cannot yet always achieve. Using AI to translate text from German to Azerbaijani and contextualize it is a powerful tool for bilingual people and companies operating in international markets. "Artificial bilingualism arises as a result of specialized training. When a person begins to learn a foreign language, they already possess native speech skills that they strive to transfer to the new language. In this case, foreign words are reproduced through internal translation" [6]. However, despite significant progress, many challenges remain related to translation accuracy, cultural differences, and language complexity. "Es gibt fünf Gangarten", "Das ist Schritt, Trab, Galopp, Pass und Tollt" [5]. "Beş gediş növü var. Bunlar addım, trot, qalop, pas və tölt-dür. Bu, trot və qalop arasında orta bir şeydir" - When translating these sentences from a text passage into Azerbaijani, the meaning of the translation changes. AI analyzes user errors and adjusts lessons to help address weaknesses. While AI can handle grammar rules well, it may not always accurately assess more complex aspects of language, such as idiomatic expressions or cultural peculiarities. For example, the word "case" in German, "Aktenkoffer", cannot be translated into Azerbaijani and can mean a suitcase, a court case, or even a computer case, depending on the context, and the system may not always select the correct meaning. AI may not always take the context of a phrase into account, leading to interpretation errors.

When background noise is too loud, the system may fail to recognize keywords, resulting in incomplete or distorted recognition results. In crowded conversations or in rooms with poor acoustics, speech recognition technologies may struggle to accurately interpret speech. The system may fail to recognize or misinterpret idioms or culturally specific expressions. When learning a foreign language, a person already has native language skills that they strive to transfer to the new language. Speech recognition technologies may not always correctly interpret ambiguous words or phrases if the context is not clear. Here's how AI is being used in language learning: Many popular language learning apps, such as Duolingo and Babbel, use AI to create personalized and adaptive courses. These apps use AI algorithms to analyze a user's progress and tailor lessons to their level and preferences. Thus, AI in bilingualism has enormous potential, but it's important to understand its limitations, especially in terms of cultural and contextual understanding.

In the 21st century, artificial intelligence (AI) has revolutionized many areas of human endeavor, and linguistics is no exception. Machine translation, once the stuff of science fiction, has now become an everyday tool available to everyone. Platforms based on neural networks can instantly process enormous volumes of text, enabling communication between speakers of different languages. This has opened up unprecedented opportunities for international business, cultural exchange, and education.

However, behind this impressive speed and accessibility lie a number of fundamental challenges, which become particularly apparent when working with language pairs belonging to different cultural and linguistic families. Translation from German, a Germanic language, into Azerbaijani, a Turkic language, is a prime example of this challenge.

In this article, we explore the key limitations faced by AI systems when translating from German to Azerbaijani. We will analyze why literal accuracy does not guarantee translation adequacy and how cultural contexts, idiomatic expressions, and semantic ambiguity create blind spots for modern algorithms. As the initial thesis rightly notes, “localization requires not only accurate translation but also a thorough understanding of cultural contexts, which AI cannot yet always achieve”.

The purpose of this paper is not to downplay the achievements of AI, but to outline the limits of its competence, emphasizing the indispensable role of human experts in creating high-quality and culturally adapted translations. We will examine the theoretical foundations of “artificial bilingualism”, analyze lexical-semantic and syntactic barriers using specific examples, and propose a model of human-machine synergy as the most promising path for the development of the translation industry.

Theoretical Foundations: “Artificial Bilingualism” and the Problem of Transfer. The concept of machine translation is closely linked to the concept of bilingualism. While bilingualism for humans is the result of prolonged immersion in a language environment or conscious learning, for AI it is a process based on the analysis of gigantic arrays of parallel texts. In this context, the term "artificial bilingualism" has emerged, which accurately describes the mechanics of neural network translators. “Artificial bilingualism arises as a result of specialized training. When beginning to learn a foreign language, a person already possesses native speech skills that they strive to transfer to the new language. In this case, foreign words are reproduced through internal translation” [6].

This process, known in linguistics as language interference or transfer, is natural for humans learning a second language. However, in AI, this “transfer” is of a different nature. The machine does not “understand” language, but rather identifies statistical patterns and correlations between words and phrases in two languages. It operates at the level of the “surface structure” of language, without delving into its “deep structure”, as discussed by the renowned linguist Noam Chomsky.

“Surface structure is what we say and hear, while deep structure expresses the semantic relationships and underlying meaning of a sentence. The task of a linguist is to discover the rules that transform deep structure into surface structure” — Noam Chomsky (paraphrased from his work on generative grammar).

AI is excellent at transforming surface structures. It can reliably change word order in a sentence, adjust cases and tenses according to rules extracted from training data. However, when conveying meaning requires restructuring an entire phrase, accessing its underlying meaning, the machine often fails. It lacks human intuition and knowledge of the world (extralinguistic knowledge) that allow it to understand the author's intention, not just the formal meaning of words.

Lexical transference. German inclusions are often encountered in the Azerbaijani speech of migrant families. These are closely related to interlingual equivalence and the desire for ellipsis, that is, economy of linguistic resources. The success or failure of communication directly depends on this [7]. The most frequent inclusions are:

“Amt” (şöbə);

“Arbeitsamt” (iş birjası);

“Bewerbung” (a lexeme that has no single-word equivalent in Azerbaijani; “işə qəbul olmaq və yaxud ali təhsil almaq üçün ərizə”);

“Heim” (miqrantlar üçün məntəqə);

“Kontingentflüchtling” (qaçqın kvota);

“Sozialhilfe” (sosial yardım), and others.

Lexical transference sometimes also involves the following phenomenon: in their original forms, some German lexemes or expressions are inflected in Azerbaijani inflections, which corresponds to a similar syntactic structure.

When translating from German to Azerbaijani, this manifests itself in excessive literalism. Complex German compound nouns or frame constructions may be formally translated correctly, but in Azerbaijani they will sound cumbersome and unnatural, as Turkic languages have a different, agglutinative structure. AI reproduces the form, but loses the ease and idiomatic expression inherent to a native speaker.

Lexical-semantic barriers: ambiguity and cultural gaps: One of the most serious challenges for AI is polysemy - the multiple meanings of a single word. A human translator selects the correct meaning almost instantly based on context. For a machine, this choice remains probabilistic.

The example of the word “case” given in the abstract perfectly illustrates this problem.

The German word “der Aktenkoffer” clearly means “document briefcase”.

At the same time, the Russian word “case”, borrowed from English, can mean:

Court case (German: “der Fall”).

A specific instance, situation (German: “der Fall”, “das Beispiel”).

Computer case (German: “das Gehäuse”).

Suitcase, carrying case (German: “der Koffer”). When translating a phrase from German to Azerbaijani, where a word can have multiple meanings, AI risks making errors. For example, if the word “Fall” appears in a German text, the AI might translate it into Azerbaijani as “hal” (incident, situation), but also as “yıxılma” (fall). Without a broader context, choosing the correct translation becomes a lottery for the machine. The German-Azerbaijani pair contains numerous such ambiguous words, requiring the translator not only to have knowledge of the language but also a deep understanding of the subject matter.

T.G. Grushevitskaya writes: “When comparing the two languages, the following situation is easily discernible, at our discretion. When certain information is transmitted from one source to another, it suddenly becomes apparent that a kind of “status quo” is established between them” [1]. The researcher explains her idea: “Objective reality exists independently of the consciousness of the transmitting and receiving parties and, therefore, is an absolute parameter in the process of learning a foreign language. However, since any transmission of material is closely linked to communication through the reflection of the participants themselves, in

this case certain subjective factors are also present, not to mention accompanying social ones. Thus, a sociolinguistic typology of bilingualism is evident, based on the example of comparing any two languages" [1].

Another complex problem is cultural lacunae. These are concepts, realities, or phenomena that exist in one culture but have no direct analogue in another. German culture is rich in such concepts: "Feierabend" (not simply the end of the workday, but a special state of rest after work), "Gemütlichkeit" (coziness, spiritual comfort), "Schadenfreude" (schadenfreude).

When translating into Azerbaijani, AI will likely offer a descriptive translation or select a closest, but not exact, equivalent. For example, "Feierabend" could be translated as "iş gününün sonu" (end of the workday), but this completely loses the cultural connotation of well-deserved rest and personal time.

The great German philosopher and linguist Wilhelm von Humboldt argued that language is not just a collection of words, but a reflection of the spirit and culture of a people. "Every language describes a circle around the people to which it belongs, from which no one can escape except by entering another circle" - Wilhelm von Humboldt.

AI, not being a bearer of culture, is incapable of existing within this "circle". It sees it only from the outside, analyzing texts, but without experiencing the experience behind the words. Problems of cultural adaptation and idioms: While lexical gaps create difficulties at the level of individual words, idioms and phraseological units present a barrier at the level of entire expressions. Idioms are the quintessence of a nation's cultural code, and their literal translation almost always leads to absurdity. Take simple German idioms: "Tomaten auf den Augen haben" (literally: "to have tomatoes before one's eyes") means "to see nothing, to fail to notice the obvious". An AI would likely offer a literal translation: "Gözlərində pomidor olmaq", which would only confuse an Azerbaijani reader. A proper cultural adaptation would be to use an Azerbaijani equivalent, for example, "gözü bağlı olmaq" (to be blindfolded) or a descriptive translation. The following example: "Ich verstehe nur Bahnhof" (literally: "I only understand 'train station'") means "I don't understand anything". A literal translation of "Mən ancaq vağzal başa düşürəm" would be meaningless.

This problem brings us to a key distinction introduced by the American translation theorist Eugene Nida: the distinction between formal equivalence and dynamic equivalence. Formal equivalence (or formal correspondence) focuses on maximally preserving the form and content of the original message. It strives for a literal translation. Dynamic equivalence (or functional equivalence) aims to ensure that the translated text has the same impact on its reader as the original text. Meaning is more important than form.

Modern AI systems primarily strive for formal equivalence. They excel at translating technical instructions, legal documents (where precise wording is crucial), and news reports. But as soon as the text acquires artistic, emotional, or cultural overtones, a dynamic approach is required, which only humans are fully capable of. Localizing marketing slogans, translating poetry, or adapting humor are all areas where AI remains only a rough tool. Syntax and Context: Case Study: Let's consider the example given in the original abstract, which clearly demonstrates how AI can not only make a mistake, but also distort the meaning of the source text, going beyond its scope.

Original German text:

"It's like walking, trotting, galloping, ambling, and tölt" [5]. (Translation: "There are five gaits. These are the walk, trot, gallop, amble, and tölt")

AI translation into Azerbaijani: "Beş gediş növü var. Bunlar addım, trot, qalop, pas və tölt-dür. Bu, trot və qalop arasında orta bir şeydir". (Translation: "There are five types of gait. They are the walk, the trot, the gallop, the amble, and the tölt. It's somewhere between the trot and the gallop")

Error analysis: The AI not only translated the source text but also added an explanatory sentence that wasn't in the original. Why did this happen? The algorithm, upon encountering the rare word "Tölt" (tölt is a specific gait of Icelandic horses), likely consulted its knowledge base. This database contained not only parallel texts for translation, but also encyclopedia articles, definitions, and descriptions. The AI determined that the word "tölt" might be unclear to the reader and, in an effort to be "helpful", added its definition.

This case reveals several fundamental limitations:

Violation of the fidelity principle. The translator is not allowed to add or remove information from the source text unless specifically stated in the task (for example, during adaptation). The AI violated this golden rule. Misunderstanding of context and task. The AI does not know the intended purpose of this translation. If it is a scientific article about horse breeding, such an explanation may be inappropriate. If it is an excerpt from a fiction book, it undermines the author's style. If it is a terminology test, the AI simply provides hints. AI "hallucinations". More broadly, this is an example of a so-called "hallucination" - when a neural network generates information that is not based on the provided input data, but is statistically probable. This example proves that even with a grammatically and lexically correct translation, AI can make a gross semantic error due to a lack of understanding of the boundaries of its task and an inability to work strictly within the provided context. The analysis shows that, despite impressive technological progress, artificial intelligence in its current form cannot completely replace humans in the field of translation from German to Azerbaijani, especially when it comes to texts that require cultural adaptation and a deep understanding of context. The key limitations of AI can be summarized as follows: Culture blindness: AI is unable to grasp cultural connotations, allusions, and realities, leading to a loss of depth and meaning. Contextual limitations: Algorithms often fail to correctly interpret the broader context, leading to errors in selecting the meanings of polysemantic words. Inability to handle idioms: Literal translations of phraseological units render the text meaningless or comical. Tendency to distort the source: As the example with the allures demonstrated, AI can add information that was not present in the original, violating the principle of textual fidelity.

Does this mean we should abandon AI translators? Absolutely not. The future of translation lies not in the

dichotomy of “human versus machine”, but in their synergy. The ideal work model looks like this: Drafting: AI is used to quickly create a rough translation of large volumes of text. This saves the translator time and effort, relieving them of routine work.

Post-editing: A human expert (a native speaker or a subject matter expert) proofreads, edits, and corrects the machine translation. At this stage, lexical inaccuracies, stylistic errors, and idioms and cultural realities are corrected. Quality Assurance: A final check ensures that the text is not only accurate, but also sounds natural, relevant, and fits its purpose.

Thus, AI becomes a powerful tool in the hands of a professional, not a replacement. The speaker assumes the role of assistant, while the human performs creative and analytical work that requires critical thinking and cultural erudition. Understanding these limitations and advantages is key to the effective use of technology and achieving the highest quality in intercultural communication.

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PHILOSOPHICAL SCIENCES

THE BODY AS A BATTLEFIELD: THE POLITICS OF SEXUAL CONTROL IN PROCESSES OF DE-COLONIZATION AND THE ESTABLISHMENT OF NATIONAL IDENTITY

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Abstract

The aim of the article is to examine how the policy of sexual control is implemented by the authorities. Sexuality is viewed not only as a biological need, but also as an instrument of power, regulation of society, and social inequality. The principle of bodily autonomy is analyzed as the right of every person to independently, without outside interference, coercion or violence, dispose of their own body. The key philosophical and anthropological concepts that address this problem are traced. The symbolism of some sexual perversions is also analyzed.

Keywords: philosophical anthropology, political anthropology, corporeality, bodily autonomy, symbol, symbolization, power, political pressure, perversion.

Introduction

"The body as a battlefield" is a concept that reveals how privacy and reproductive rights become the object of political pressure. In the context of decolonization, control over the body and gender roles is used by imperial centers to suppress culture, while national liberation movements often try to mobilize the body to assert their own identity.

The politics of sexual control have been studied by scholars in philosophy, history, sociology, and gender studies. They view sexuality not only as a biological need, but also as a tool of power, regulation of society, and social inequality. Key scholars who have studied this aspect include M. Foucault, J. Weeks, G. Rubin, J. Butler, and K. McKinnon.

Michel Foucault is a French philosopher and historian, author of the seminal work The History of Sexuality (La volonté de savoir); he argued that in modern societies, power controls people not only through violence, but also through discourses about sexuality, imposing certain norms, classifications (e.g., "normal" and "deviant"), and standards of behavior [3, p. 76]. Jeffrey Weeks is a British sociologist and researcher, one of the most prominent historians of sexuality. He analyzed how sexuality becomes a field of political struggle, and the state, religion, and institutions attempt to exercise control over the body, rights, and identity through the prism of "sexual politics". Gayle Rubin is an American anthropologist and gender theorist. She is known for her work Thinking About Sex: A Radical Theory of the Politics of Sexuality, in which she analyzed the social hierarchy that legitimizes some sexual practices (e.g., heterosexual and reproductive) and criminalizes or stigmatizes others. Judith Butler is a philosopher and queer theorist. In her writings (including The Gender Trouble), she has examined how heteronormative societies and institutions coerce gender roles and sexual desires through established norms. Catharine MacKinnon is a lawyer and feminist theorist. She has explored the relationship between sexuality, gender inequality, and law, arguing that in patriarchal societies, sexual control over women is often institutionalized in the form of sexual violence, harassment, and pornography.

However, this problematic field has not been fully explored. In particular, some key anthropological symbols that allow us to reveal the problematic of sexuality in the political sphere have not yet been studied.

Main part.

Bodily autonomy is the right of every person to independently, without external interference, coercion or violence, dispose of their own body. It is a fundamental principle of human rights, based on the sovereignty of the individual, free will and self-determination. This concept encompasses several key aspects: a) personal choice, the right to make decisions about their own health and medical intervention (for example, consent to surgery or reproductive rights); b) inviolability, i.e. protection from physical violence, sexual exploitation and coercion; c) bodily integrity, i.e. the inviolability of the physical body, when no one has the right to harm or use it without your will [2].

Empires and authoritarian regimes impose their own demographic, sexual and gender policies in order to break local social structures [1]. Control is exercised through: a) reproductive regulation This is forced sterilization, prohibition or imposition of abortions in order to change the demographic composition of the population; b) imposition of patriarchy (the destruction of local egalitarian traditions and the consolidation of rigid gender roles, where women are viewed exclusively as a resource for the reproduction of the nation, and men as an instrument of military expansion; c) criminalization of sexuality, which finds its expression through the persecution of identities that deviate from imperial "traditional" or religious standards. Liberation from colonial influence requires not only the achievement of po-

litical independence, but also the decolonization of consciousness and body, the rejection of imposed colonial standards of corporeality, beauty and sexuality [4, p. 53].

In the struggle for survival and national identity (particularly during armed conflicts), citizens' bodies are deeply militarized. Sexual violence during war is used as a weapon of genocide, aimed at destroying national identity by destroying the physical and psychological integrity of victims. Physical loss and disability become part of collective trauma and national pride. The affirmation of national identity is often contradictory. On the one hand, society strives for European standards of freedom, on the other hand, there is a strong demand for a return to "traditional family values" as a protection against assimilation.

The most egregious documented historical and contemporary case of colonial policies regarding bodily autonomy is the forced and coerced sterilization of indigenous peoples (Indians and Inuit) in North America. This practice has been ongoing since the first half of the 20th century and is still being documented in some places in the 21st century. This is how this policy of control over reproductive rights played out in practice. Canada and the United States had laws on sexual sterilization (for example, in the province of Alberta, the Sexual Sterilization Act, which was in force from 1928 to 1972). These policies were based on racist and eugenic ideas, according to which indigenous peoples were considered "inferior" or prone to "deviance". Although indigenous peoples constituted a tiny percentage of the population, they constituted a disproportionately large share of those forcibly sterilized—about 25%.

Many indigenous women were forced to sign consent forms for tubal ligation or were forced to do so (under threat of not having their babies returned) at their most vulnerable, during intense pain or after a cesarean section. The procedures were often disguised as other surgical procedures or performed without proper consent, a direct violation of the fundamental human right to control one's own body. In the United States alone, up to 42% of indigenous women of childbearing age were sterilized in the 1970s, often without their knowledge or under duress.

Even after the repeal of official eugenics laws, the practice of spontaneous or forced sterilization in medical institutions continued in Canada until 2018. This policy is considered by human rights activists, in particular the NWAC (Native Women's Association of Canada), as a form of systemic colonial violence and a component of ethnic cleansing and genocide, as it is aimed at controlling the reproduction of an entire people [7].

Sexual perversions: a symbolic dimension. Viewing political violence through the lens of sexual perversion is a powerful metaphor used in psychoanalysis, philosophical anthropology, and social philosophy. Both phenomena (political violence and perversions) are based on similar mechanisms: the violation of boundaries, the dominance of one person (or system) over another, and the acquisition of power instead of partnership. As in sexual perversions (where the sexual act becomes a means of control rather than intimacy), political violence uses coercion to demonstrate power. The repressive state apparatus or dictator imposes its will on society in the same way that the perpetrator imposes a script on the victim, ignoring her sovereignty and needs.

Lacanian psychoanalysis reinterprets the interaction of power and desire through several key concepts. Let us consider them briefly.

1. Desire as "the desire of the Other." Lacan argued that human desire is never directed at the object of utilitarian need. It is always the desire for what the "Other" desires (society, the system of power, authority). We desire power or what power imposes on us because we seek recognition and fill the ontological void in our own identity.

2. The power of law and the temptation to violate. Lacan repeatedly emphasized the inseparable connection between power/law (the Law of the Father, the Symbolic Order) and desire. The very act of prohibition (for example, taboos or restrictions imposed by authority) paradoxically eroticizes the object. Desire always tries to violate the law, but it needs this law to exist and continue its endless search [6, p. 212].

3. Hidden pleasure in the mechanisms of power. Developing Lacan's ideas, S. Žižek notes that submission to power does not arise exclusively from coercion or ideological blindness. The subject finds perverse pleasure (jouissance) in performing the rituals that power demands. This eroticization of the structures of dependence makes submission psychologically attractive. Pleasure is hidden not as a result of the application of power, but in the very process of the functioning of power [8, p. 116].

In his Seminar XVII, Lacan identified four basic discourses that describe forms of human communication and power: the Master's discourse, where direct power and knowledge are articulated; the university discourse, the hysterical discourse; and the analyst's discourse. Power is understood here as a structure based on knowledge and unconscious desires. The mechanisms of power attempt to provide stability to the subject, but desire (as a primary process) remains something that these structures cannot fully control.

Just as sexual perversion diverts the sexual act from its natural purpose (procreation and mutual love), political violence distorts the very essence of politics. Instead of being a space for social contract and development, politics is transformed into an instrument of humiliation, traumatization and destruction of the other, which is a direct violation of fundamental human rights. The fundamental feature of sexual violence is the transformation of a living person into an object (a thing, a means of pleasure). Political violence (e.g. war, repression, genocide) works in the same way: it devalues human life, turning masses of people into "cannon fodder", statistics or tools for achieving geopolitical goals.

Let's consider some common sexual perversions in a symbolic way.

Sexual sadism. It becomes a political symbol when power, domination and violence are used as an instrument of domination, and the infliction of suffering is transformed into an end in itself or a means of control. This phenomenon is considered through the prism of politics, sociology and psychoanalysis in some aspects:

a). Extreme domination and humiliation. In politics, sadism symbolizes the transformation of human dignity into a resource for demonstrating absolute power. When political regimes (for example, totalitarian or authoritarian) destroy legal and ethical boundaries, they use sadistic practices - torture, public humiliation, repression.

This becomes a symbol of the fact that the state controls not only the bodies, but also the will of people; b) Deviance as the norm. W. Reich linked political sadism with the suppression of natural sexuality and personal freedom by the patriarchal state. According to this theory, sexual repression and authoritarianism go hand in hand, generating mass aggression; c) The Dark Tetrad. Modern social research studies the connection between radical political views and personality traits, including "everyday sadism" and psychopathy (getting pleasure from harming others). In political discourse, sadism can be used as a means of propaganda, when political leaders or movements sacralize cruelty in order to mobilize supporters against "enemies". In extreme manifestations, for example, in neo-Nazi or misanthropic groups, sadistic elements become part of identity, emblems, or symbolism.

Sexual sadomasochism as a political symbol is used to metaphorically describe unequal power relations, where dominance and submission become instruments of social contract, propaganda or protest. Sadomasochistic practices are often mentioned to describe the pathological dependence between society and authoritarian leaders. The concept of "political sadomasochism" describes a situation where the authorities use repression (sadism), and part of society demonstrates approval, voluntary submission or even dependence (masochism) for the sake of an imaginary order or security. The most famous example of the symbolization of this perversion in art is the performance "Seven Meditations on Political Sado-Masochism", created in 1973 by the legendary experimental collective The Living Theatre.

The play is set after members of the troupe were imprisoned and brutally treated by the military dictatorship in Brazil. Authors Julian Beck and Judith Malina used sadomasochism as an allegory to visualize the coercion of the state over the individual (war, money, property, death), calling for an anarchic revolution. E. Fromm's concept of "escape from freedom" describes masochistic tendencies as the desire of the individual to get rid of the burden of responsibility and dissolve in the power of the leader or state. In this context, sadomasochism serves as a tool for analyzing the nature of dictatorships and fascism. In modern queer politics and feminism, the attitude to sadomasochism as a symbol is different. Some theorists view conscious sadomasochistic practices as a subversion of patriarchal norms. Through the concept of consensus, security, and voluntariness, they symbolize the deconstruction of power hierarchies, showing that any power can be rethought and controlled [5, p. 30].

Exhibitionism as a metaphor describes the demonstrative public behavior of politicians; it symbolizes the rejection of privacy for the sake of political dividends, self-admiration of power, playing the public and manipulation. In the modern context, this symbol manifests itself through several key aspects: demonstrative openness (hypertransparency) as a demonstration of details of personal life or "candid" work on camera to create an image of "one's" politician. This often hides real political intentions and manipulates the emotions of voters; "politics as a performance", when instead of deep legislative work, the emphasis is on bright, but meaningfully empty performances. The goal of such behavior is to instantly attract attention (hype), and not to solve social problems. Just as psychological exhibitionism violates boundaries, political exhibitionism imposes information noise on society, forcing citizens to become passive spectators, regardless of their desire. This symbol emphasizes the transition from traditional political responsibility to an era of spectacle, where form dominates substance and shocking replaces a program of action.

Voyeurism. In a political context, it turns into a metaphor for a socio-political phenomenon where the public plays the role of a passive spectator, watching the emotional dramas, betrayals and “dirty laundry” of the authorities as an exciting reality show, consciously refusing to participate in the real governance of the state. Political voyeurism is based on several key aspects: politics as a reality show (tabloidization), when instead of discussing program decisions, the focus shifts to scandals, compromising information and the personal lives of politicians. Citizens consume it as entertainment; the illusion of control (panopticon), when voters have the idea that they see everything and control the authorities thanks to social networks or the media, although in reality this process is often skillfully directed by the politicians themselves. The transformation of citizens into spectators weakens democratic institutions. Instead of being active subjects (voters), people become spectators who discuss political theater, but do not influence it. Live broadcasts of meetings, drone videos, public showdowns create an atmosphere of openness, which is often only a simulation of transparency. This phenomenon is exploited to distract society from real systemic problems and transfer political struggle to the plane of emotional spectacle.

Conclusions.

Consideration of issues related to politics and statehood processes in a symbolic way is promising from a philosophical point of view. Interesting, in our opinion, is the interpretation of philosophical and anthropological symbolism, the study of the connections between politics, on the one hand, and corporeality and sexuality, on the other. A separate field of philosophical and anthropological research on this issue is the symbolization of politics as sexual perversion. This analysis allows us to trace how the attack of power on a person - in particular, on his bodily autonomy - occurs.

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